

# STIC Search Report

EIC 1700

STIC Database Tracking Number: 213367

TO: Gregg Cantelmo  
Location: REM 6C81  
Art Unit : 1745  
January 25, 2007

Case Serial Number: 10/766385

From: Mei Huang  
Location: EIC 1700  
REMSSEN 4B28  
Phone: 571/272-3952  
Mei.huang@uspto.gov

## Search Notes

Examiner Cantelmo,

Please feel free to contact me if you have any questions or if you would like to refine the search query,

Thank you for using STIC services!

Mei Huang



**Banks, Kendra**

213867

**From:** GREGG CANTELMO [gregg.cantelmo@uspto.gov]  
**Sent:** Wednesday, January 24, 2007 1:40 PM  
**To:** STIC-EIC1700  
**Subject:** Database Search Request, Serial Number: 10/766385

**Requester:**  
GREGG CANTELMO (P/1745)  
**Art Unit:**  
GROUP ART UNIT 1745  
**Employee Number:**  
75777  
**Office Location:**  
REM 06C81  
**Phone Number:**  
(571)272-1283  
**Mailbox Number:**  
REM 6C81

SCIENTIFIC REFERENCE BR  
Sci & Tech Inf. Cntr

JAN 24 RECD

Pat. & T.M. Office

**Case serial number:**  
10/766385  
**Class / Subclass(es):**

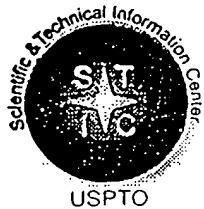
**Earliest Priority Filing Date:**

**Format preferred for results:**  
Paper

**Search Topic Information:**

Please search the composite structure of claims 1-19. Note that the specification gives more detail with respect to the various material such as those materials recognized as suitable dopants.

**Special Instructions and Other Comments:**



# STIC Search Results Feedback Form

**EIC17000**

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader  
571/272-2505 REMSEN 4B28

## Voluntary Results Feedback Form

- I am an examiner in Workgroup:  Example: 1713  
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

*Types of relevant prior art found:*

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature  
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

=> fil reg

FILE 'REGISTRY' ENTERED AT 13:21:29 ON 25 JAN 2007  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2007 American Chemical Society (ACS)

=> d his nofile

(FILE 'HOME' ENTERED AT 10:43:07 ON 25 JAN 2007)

FILE 'HCAPLUS' ENTERED AT 10:43:17 ON 25 JAN 2007  
L1 1 SEA US2004185343/PN

FILE 'REGISTRY' ENTERED AT 10:44:32 ON 25 JAN 2007  
L2 11 SEA (10124-54-6/BI OR 10402-24-1/BI OR 14542-94-0/BI OR  
L3 15885 SEA 7664-38-2/CRN  
L4 7585 SEA L3 AND M/ELS  
L5 609 SEA L4 AND 2/NC  
L6 558 SEA L5 AND SALT#  
L7 51 SEA L5 NOT L6  
L8 3 SEA L2 AND L5  
L9 1 SEA 7664-41-7/RN  
L10 217 SEA L5 AND (T1 OR T2 OR T3 OR B2)/PG

FILE 'HCAPLUS' ENTERED AT 11:22:48 ON 25 JAN 2007  
L11 84474 SEA L5  
L12 14536 SEA L10  
L13 1498 SEA L8  
L14 147983 SEA L9  
L15 257309 SEA NITRIDE#  
L16 11397 SEA OXYNITRIDE#  
L17 875 SEA L11 AND (L15 OR L16)  
L18 13515 SEA METAL? (2A) L15  
L19 426 SEA METAL? (2A) L16  
L20 41 SEA L11 AND (L18 OR L19)

FILE 'REGISTRY' ENTERED AT 11:33:19 ON 25 JAN 2007  
L21 1825625 SEA (M(L)N)/ELS  
L22 3082 SEA L21 (L) 2/ELC.SUB  
L23 2268 SEA L21 (L) O/ELS (L) 3/ELC.SUB  
L24 2071 SEA L22 AND (T1 OR T2 OR T3 OR B2)/PG  
L25 1416 SEA L23 AND (T1 OR T2 OR T3 OR B2)/PG

FILE 'HCAPLUS' ENTERED AT 11:35:25 ON 25 JAN 2007  
L26 116903 SEA L22  
L27 8158 SEA L23  
L28 639 SEA L11 AND (L26 OR L27)  
L29 QUE MIXT# OR MIXTURE? OR BLEND? OR ADMIX? OR COMMIX? OR  
IMMIX? OR INTERMIX? OR IMPREGNAT? OR COMPOSIT? OR COMPN#  
OR COMPSN# OR FORMULAT? OR COMBINAT? OR INTERSPER? OR  
AMALGAM?  
L30 QUE DOPE# OR DOPING# OR DOPANT#  
L31 249 SEA L28 AND L29  
L32 QUE (MIXT# OR MIXTURE? OR BLEND? OR ADMIX? OR COMMIX? OR  
IMMIX? OR INTERMIX? OR COMPOSIT? OR COMPN# OR COMPSN# OR  
FORMULAT? OR INTERSPER?)/TI  
L33 89 SEA L31 AND L32  
L34 QUE (FIRST? OR 1ST OR 1(W)ST OR PRIMARY OR PRINCIPAL) (2A)

(COMPONENT? OR PART# OR PORTION? OR SEGMENT?)

L35 0 SEA L33 AND L34  
D KWIC 1-5  
D KWIC L33 1-5

L36 380204 SEA NH3 OR AMMONIA#

L37 43 SEA L11 AND (NITRIDING# OR DITRIDED? OR NITRIDIZATION?)

L38 10 SEA L11 AND (NITRIDING# OR NITRIDED# OR NITRIDIZATION?)  
AND (OXIDI? OR OXIDA? OR OXIDN#)

L39 124 SEA L11 AND OXYNITRIDING# OR OXYNITRIDED# OR OXYNITRIDIZA  
TION?

L40 68 SEA (L37 OR L38 OR L39 OR L20) AND L29

L41 QUE COMPOSITE#

L42 18 SEA L40 AND L41

L43 7 SEA (L37 OR L38 OR L39 OR L20) AND L30

L44 QUE MILLING? OR MILL OR MILLS OR MILLED OR BALLMILL? OR  
BALL(W)MILL? OR CRUMBL? OR GRIND? OR CRUSH?

L45 6 SEA (L40 OR L42 OR L43) AND L44

L46 QUE CORE? OR KERNEL? OR SHELL?

L47 QUE ENCAPSUL? OR CAPSULAT?

L48 3 SEA (L40 OR L42 OR L43) AND (L46 OR L47)

L49 19 SEA (L40 OR L42 OR L43) AND (L14 OR L36)

L50 32 SEA L33 AND L41

L51 1 SEA L50 AND (L46 OR L47)

L52 27 SEA L42 OR L43 OR L45 OR L48

L53 44 SEA L40 NOT L52

L54 18 SEA L52 AND L41

L55 0 SEA L53 AND L41

L56 18 SEA L51 OR L54

L57 9 SEA L52 NOT L56

L58 QUE OLIVINE? OR NASICON?

L59 3 SEA (L40 OR L42 OR L43) AND L58

L60 18 SEA L59 OR L56

L61 2 SEA L50 AND L58

L62 18 SEA L61 OR L56

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 13:21:32 ON 25 JAN 2007  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2007 AMERICAN CHEMICAL SOCIETY (ACS)

=> d l56 ibib abs hitstr hitind 1-18

L56 ANSWER 1 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:1223102 HCAPLUS

TITLE: Microstructure of the **composite**  
**oxynitrided** chromium layers produced on  
steel by a duplex method

AUTHOR(S): Tacikowski, M.; Ulbin-Pokorska, I.; Wierzchon,  
T.

CORPORATE SOURCE: Faculty of Materials Science and Engineering,  
Warsaw University of Technology, Warsaw, 02-507,  
Pol.

SOURCE: Surface and Coatings Technology (2006), 201(6),  
2776-2781  
CODEN: SCTEEJ; ISSN: 0257-8972

PUBLISHER: Elsevier B.V.  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB The paper describes the microstructure of the composite layers produced on chromium pre-coated AISI 1045 steel by oxynitriding under glow discharge conditions (duplex method). The layers were examined by the cross-section method using transmission electron microscopy. Their microstructure was composed of the 4 zones: a near-surface CrN-Cr<sub>2</sub>O<sub>3</sub> mixture zone about 1 µm thick, a Cr<sub>2</sub>N zone about 4 µm thick, a chromium zone-the thickest-about 50 µm, and the thinnest (Cr,Fe)<sub>7</sub>C<sub>3</sub> zone about 0.5 µm thick. Cr<sub>2</sub>O<sub>3</sub> also occurred in the form of nano-crystalline aggregates, about 1 µm in size, situated in the upper part of the Cr<sub>2</sub>N zone. All the zones had a fine-grained structure, except the finest nano-crystalline zone situated at the surface. It was found that, during oxynitriding, the cracks present in the chromium coating are filled up by chromium nitrides and oxides. This may explain the observed improvement of the corrosion resistance.

CC 55 (Ferrous Metals and Alloys)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 2 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2006:337615 HCAPLUS

DOCUMENT NUMBER: 144:394637

TITLE: Solid electrolytes based on lithium hafnium phosphate for active metal anode protection  
INVENTOR(S): Nimon, Yevgeniy S.; De Jonghe, Lutgard C.; Visco, Steven J.

PATENT ASSIGNEE(S): Polyplus Battery Company, USA

SOURCE: U.S. Pat. Appl. Publ., 16 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2006078790	A1	20060413	US 2005-245472	20051005
				20041005

PRIORITY APPLN. INFO.: US 2004-616325P P

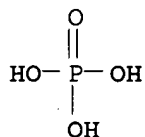
AB Active metal electrochem. structure, in particular an active metal neg. electrode (anode) protected with an ionically conductive protective architecture incorporating a glassy, ceramic or glass-ceramic solid electrolyte material based on lithium hafnium phosphate, and associated electrochem. devices and methods, provides advantages over conventional structures. The protective architecture prevents the active metal from deleterious reaction with the environment on the other (cathode) side of the architecture, which may include aqueous, air or organic liquid electrolytes and/or electrochem. active materials.

IT 10377-52-3, Lithium phosphate  
RL: DEV (Device component use); USES (Uses)

(can be in conductive glass or ceramic electrolyte material;  
solid electrolytes based on lithium hafnium phosphate for active  
metal anode protection)

RN 10377-52-3 HCAPLUS

CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

INCL 429137000; 429246000; 429303000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72

IT Membranes, nonbiological

(composite, semipermeable; solid electrolytes based on  
lithium hafnium phosphate for active metal anode protection)

IT Glass, uses

RL: DEV (Device component use); TEM (Technical or engineered  
material use); USES (Uses)

(oxynitride, active metal phosphorus  
oxynitride glass, conductive, contacts anode; solid  
electrolytes based on lithium hafnium phosphate for active metal  
anode protection)

IT Battery electrolytes

Calcination

Cathodic protection

Ceramics

Glass ceramics

Grinding (size reduction)

Primary batteries

Primary battery separators

Secondary batteries

Secondary battery separators

(solid electrolytes based on lithium hafnium phosphate for active  
metal anode protection)

IT 7439-93-2D, Lithium, inorg. compds. 10377-52-3, Lithium  
phosphate 12057-24-8, Lithium oxide, uses 13774-56-6

RL: DEV (Device component use); USES (Uses)

(can be in conductive glass or ceramic electrolyte material;  
solid electrolytes based on lithium hafnium phosphate for active  
metal anode protection)

L56 ANSWER 3 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:119884 HCAPLUS

DOCUMENT NUMBER: 142:204864

TITLE: Medical implants coated with porous carbon  
surfaces carrying drugs

INVENTOR(S): Rathenow, Joerg; Asgari, Soheil; Ban, Andreas

PATENT ASSIGNEE(S): Blue Membranes GmbH, Germany

SOURCE: Ger. Offen., 15 pp.

CODEN: GWXXBX

DOCUMENT TYPE: Patent

LANGUAGE: German  
 FAMILY ACC. NUM. COUNT: 10  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10333099	A1	20050210	DE 2003-10333099	20030721
DE 202004009061	U1	20040916	DE 2004-202004009061	20040528
AU 2004243503	A1	20041209	AU 2004-243503	20040528
CA 2519750	A1	20041209	CA 2004-2519750	20040528
WO 2004105826	A2	20041209	WO 2004-EP5785	20040528
WO 2004105826	A3	20050623		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1626749	A2	20060222	EP 2004-735213	20040528
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
BR 2004010957	A	20060704	BR 2004-10957	20040528
US 2005079201	A1	20050414	US 2004-939021	20040910
PRIORITY APPLN. INFO.:			DE 2003-10324415	A1 20030528
			DE 2003-10333098	A1 20030721
			DE 2003-10333099	A1 20030721
			WO 2004-EP5785	W 200405



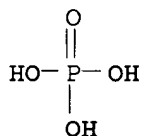
28

AB The invention concerns a method for the preparation of medical implants with functionalized surfaces involving the steps: (a) preparation of medical implant that is at least partially coated with a carbon-containing layer; (b) activation of the carbon-containing layer by forming a pores on the surface; (c) functionalization of the activated, carbon-containing surface. The carbon-containing layer is composed of pyrolytically prepared carbon, carbon deposited by CVD or PVD process, sputtered carbon, metal carbides, **metal carbonitrides, metal oxynitrides, metal oxycarbides** or their **combinations**. The carbon-containing layers are activated by oxidation with air, oxygen, dinitrogen oxide, and oxidizing acids, also at elevated temperature. A reduction process can also be used for activation. Activated surfaces are functionalized by loading one or more drugs, microorganisms or cells onto the surface. Activated surfaces can be sealed in a CVD or CVI (chemical vapor infiltration) process. The implants are prepared from carbon, carbon fibers, ceramics, glass, metals, alloys, artificial bone, stone, minerals. Artificial blood vessels, stents, coronary stents, peripheral stents, orthopedic implants, bone and joint prosthesis, artificial heart, heart valves, s.c., and i.m. implants can be activated and functionalized.

IT 7758-87-4, Tricalciumphosphate  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (medical implants coated with porous carbon surfaces carrying drugs)

RN 7758-87-4 HCAPLUS

CN Phosphoric acid, calcium salt (2:3) (9CI) (CA INDEX NAME)



●3/2 Ca

IC ICM A61L027-00  
 ICS A61L029-00; A61L033-00; A61F002-30; A61F002-28; A61F002-44;  
 A61F002-24

CC 63-7 (Pharmaceuticals)

IT **Composites**  
 (carbon **composites**; medical implants coated with porous carbon surfaces carrying drugs)

IT Carbonitrides  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (**metal carbide nitrides**; medical implants coated with porous carbon surfaces carrying drugs)

IT **Oxynitrides**  
 RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (**metal oxynitrides**; medical implants coated with porous carbon surfaces carrying drugs)

IT 50-02-2, Dexamethasone 50-07-7, Mitomycin 50-23-7,  
 Hydrocortisone 50-24-8, Prednisolone 50-56-6, Oxytocin,  
 biological studies 50-78-2, Acetylsalicylic acid 51-41-2,

Norepinephrine 51-43-4, Epinephrine 51-45-6, Histamine, biological studies 51-61-6, Dopamine, biological studies 52-53-9, Verapamil 53-03-2, Prednisone 53-06-5, Cortisone 53-86-1, Indomethacin 54-05-7, Chloroquine 56-23-5, Carbon tetrachloride, biological studies 56-54-2, Quinidine 56-75-7, Chloramphenicol 57-22-7, Vincristin 57-41-0, Phenytoine 58-14-0, Pyrimethamin 58-61-7, Adenosine, biological studies 59-05-2, Methotrexate 59-30-3, Folic acid, biological studies 60-54-8, Tetracycline 61-33-6, Penicillin G, biological studies 61-68-7, Mefenamic acid 62-55-5, Thioacetamide 63-74-1, Sulfonamide 64-17-5, Ethanol, biological studies 68-35-9, Sulfadiazine 69-53-4, Ampicillin 71-63-6, Digitoxin 80-08-0, Dapson 83-43-2, Methylprednisolone 87-08-1, Penicillin V 114-07-8, Erythromycin 118-42-3, Hydroxychloroquine 119-04-0, Framycetin 124-94-7, Triamcinolone 127-07-1, Hydroxycarbamide 127-31-1, Fludrocortisone 137-58-6, Lidocaine 140-64-7, Pentamidine diisethionate 152-47-6, Sulfalene 154-21-2, Lincomycin 302-79-4, Tretinoin 356-12-7, Fluocinonide 361-37-5, 365-26-4, Oxilofrine 370-14-9, Pholedrine 378-44-9, Betamethasone 382-67-2, Desoximetasone 443-48-1, Metronidazol 466-06-8, Proscillaridin 484-23-1, Dihydralazin 500-92-5, Proguanil 511-12-6, Dihydroergotamine 525-66-6, Propranolol 536-21-0, Norfenefrine 552-94-3, Salsalate 555-30-6, Methyldopa 564-25-0, Doxycycline 586-06-1, Orciprenaline 630-60-4, Ouabain 638-94-8, Desonide 644-62-2, 660-27-5, Diisopropyl amine dichloroacetate 709-55-7, Etilefrine 738-70-5, Trimethoprim 768-94-5, Amantadine 807-38-5, Fluocinolone 865-21-4, Vinblastin 1066-17-7, Colistin 1306-05-4, Fluorapatite 1306-06-5, Hydroxylapatite 1393-87-9, Fusafungine 1404-26-8, Polymyxin B 1404-90-6, Vancomycin 1524-88-5, Flurandrenolide 1695-77-8, Spectinomycin 1951-25-3, Amiodarone 2589-47-1, Prajmaliumbitartrate, biological studies 2809-21-4, Etidronic acid 3056-17-5, Stavudine 3093-35-4, Halcinonide 3385-03-3, Flunisolide 3737-09-5, Disopyramide 3930-20-9, Sotalol 4360-12-7, Ajmalin 4419-39-0, Beclomethasone 4828-27-7, Clocortolone 4936-47-4, Nifuratel 5104-49-4, Flurbiprofen 5355-48-6, 6452-71-7, Oxprenolol 6990-06-3, Fusidinic acid 7440-22-4, Silver, biological studies 7440-25-7, Tantalum, biological studies 7440-32-6, Titanium, biological studies 7440-66-6, Zinc, biological studies 7481-89-2, Zalcitabine 7542-37-2, Paromomycin 7681-49-4, Sodium fluoride, biological studies 7758-87-4, Tricalciumphosphate 8001-27-2, Hirudin 8025-81-8, Spiramycin 8067-24-1, Co-Dergocrine mesylate 9000-07-1, Carrageenan 9002-01-1, Streptokinase 9002-60-2, Corticotropin, biological studies 9002-71-5, Thyrotrophin 9002-88-4, Polyethylene 9002-89-5, Polyvinylalcohol 9003-01-4, Acrylic acid homopolymer 9003-07-0, Polypropylene 9003-39-8, Polyvinylpyrrolidone 9004-32-4, Carboxymethylcellulose 9004-34-6, Cellulose, biological studies 9004-54-0, Dextran, biological studies 9004-61-9, Hyaluronic acid 9004-64-2, Hydroxypropylcellulose 9004-65-3, Hydroxypropylmethylcellulose 9004-67-5, Methylcellulose 9005-25-8, Starch, biological studies 9005-32-7, Alginic acid 9005-49-6, Heparin, biological studies 9012-76-4, Chitosan 9039-53-6, Urokinase 9061-61-4, Nerve growth factor 10118-90-8, Minocycline 10163-15-2, Disodium fluorophosphate 10596-23-3, Clodronic acid 11096-26-7, Erythropoietin 11111-12-9, Cephalosporin 11128-99-7, Angiotensin II 12597-68-1, Stainless steel, biological studies 12629-01-5, Somatropin 12683-48-6, 13010-20-3, Nitrosourea 13292-46-1, Rifampicin 13463-67-7, Titanium dioxide, biological studies

14402-89-2, Nitroprusside sodium 14636-12-5, Terlipressin  
 15307-86-5, Diclofenac 15663-27-1, Cisplatin 15686-71-2,  
 Cefalexin 15687-27-1, Ibuprofen 16662-47-8, Gallopamil  
 16679-58-6, Desmopressin 16846-24-5, Josamycin 18323-44-9,  
 Clindamycin 19216-56-9, Prazosin 19387-91-8, Tinidazol  
 19388-87-5, Taurolidine 20830-75-5, Digoxin 21256-18-8,  
 Oxaprozin 21829-25-4, Nifedipine 22071-15-4, Ketoprofen  
 22204-53-1, Naproxen 22254-24-6, Ipratropium bromide 22494-42-4,  
 Diflunisal 23155-02-4, Fosfomycin 24937-78-8 25038-59-9,  
 biological studies 25087-26-7, Methacrylic acid homopolymer  
 25104-18-1, Polylysine 25122-41-2, Clobetasol 25190-06-1,  
 Poly(Tetramethylene glycol) 25322-68-3, Polyethylene oxide  
 25322-69-4, Polypropylene oxide 25614-03-3, Bromocriptine  
 25953-19-9, Cefazolin 26009-03-0, Polyglycolic acid 26023-30-3,  
 Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)] 26063-00-3,  
 $\beta$ -Hydroxybutyric acid homopolymer 26099-09-2 26100-51-6,  
 Polylactic acid 26124-68-5, Polyglycolic acid 26171-23-3,  
 Tolmetin 26744-04-7,  $\beta$ -Hydroxybutyric acid homopolymer, sru  
 26787-78-0, Amoxicillin 26807-65-8, Indapamide 26844-12-2,  
 Indoramin 29122-68-7, Atenolol 29679-58-1, Fénoprofen  
 30209-88-2, Polyallyl cyanoacrylate 30516-87-1, Zidovudine  
 30578-37-1, Amezinium metil sulfate 30685-43-9, Metildigoxin  
 31621-87-1, Polydioxanone 31828-71-4, Mexiletine 33069-62-4,  
 Paclitaxel 33515-09-2, Gonadorelin 33774-52-6,  
 Detajmumbitartrate, biological studies 34346-01-5, Lactic  
 acid-glycolic acid copolymer 34661-75-1, Urapidil 35607-66-0,  
 Cefoxitin 36322-90-4, Piroxicam 36703-88-5 36791-04-5,  
 Ribavirin 38194-50-2, Sulindac 38304-91-5, Minoxidil  
 39562-70-4, Nitrendipine 40391-99-9 41340-25-4, Etodolac  
 41575-94-4, Carboplatin 41708-72-9, Tocainide 42399-41-7,  
 Diltiazem 42794-76-3, Midodrine 42924-53-8, Nabumetone  
 50370-12-2, Cefadroxil 50972-17-3, Bacampicillin 51022-69-6,  
 Amcinonide 51110-01-1, Somatostatin 51264-14-3, Amsacrine  
 51333-22-3, Budesonide 51384-51-1, Metoprolol 51481-65-3,  
 Mezlocillin 51940-44-4, Pipemidic acid 52013-44-2, Nitinol  
 53123-88-9, Sirolimus 53230-10-7, Mefloquine 53237-50-6  
 53714-56-0, Leuprorelin 53910-25-1, Pentostatin 53994-73-3,  
 Cefaclor 54063-53-5, Propafenone 54143-55-4, Flecainide  
 54143-56-5, Flecainide acetate 55142-85-3, Ticlopidine  
 55268-75-2, Cefuroxim 56391-56-1, Netilmicin 57773-63-4,  
 Triptorelin 57982-77-1, Buserelin 58066-85-6, Miltefosine  
 59277-89-3, Aciclovir

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (medical implants coated with porous carbon surfaces carrying  
 drugs)

L56 ANSWER 4 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:13257 HCAPLUS  
 DOCUMENT NUMBER: 142:80039  
 TITLE: Implant materials containing metals and calcium  
 phosphate ceramics, and their manufacture  
 INVENTOR(S): Inagaki, Masahiko; Kameyama, Tetsuya; Hasegawa,  
 Koji  
 PATENT ASSIGNEE(S): National Institute of Advanced Industrial  
 Science and Technology, Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1

## PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005000519	A	20050106	JP 2003-169524	20030613
US 2005161120	A1	20050728	US 2004-866132	20040614

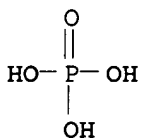
PRIORITY APPLN. INFO.: JP 2003-169524 A 20030613

AB The implant materials are manufactured by mixing metal powders which have thermal expansion coeffs. similar to those of substrates with Ca phosphate-based ceramics at arbitrary ratios, changing the mixing ratios so that the ratios of the metal powders become higher at the substrate side, forming films having gradient structures by using the powder mixts., and nitriding the metals during forming the gradient structures to form nitride layers in the metals. The implant materials show low residual strain, increased bond strength and stability of the films, and good initial fixation onto the bone. A 150-μm film was formed onto a Ti alloy substrate by plasma spraying of Ti-hydroxyapatite mixts. by changing their mixing ratios at 100:0, 70:30, 40:60, and 0:100, while introducing N to the plasma during film forming for nitriding. The adhesive strength between the substrate and the film was .apprx.50 MPa. A Ti rod was plasma-sprayed with apatite-Ti mixts. to give a test piece, which was implanted into the femur of a dog. The pull strength of the implanted test piece from the femur was .apprx.14.4 MPa 4 wk after implantation.

IT 10103-46-5, Calcium phosphate  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)  
 (bone implant materials having films of composition-gradient nitrided metal/calcium phosphate ceramics mixts. with good adhesion to metal substrates)

RN 10103-46-5 HCAPLUS

CN Phosphoric acid, calcium salt (8CI, 9CI) (CA INDEX NAME)



●x Ca

IC ICM A61L027-00  
 CC 63-7 (Pharmaceuticals)  
 Section cross-reference(s): 56, 57  
 ST metal calcium phosphate ceramic bone implant; titanium

- nitriding hydroxyapatite ceramic bone implant**
- IT Bone  
 (artificial; bone implant materials having films of **composition-gradient nitrided metal/calcium phosphate ceramics mixts.** with good adhesion to metal substrates)
- IT Ceramic **composites**  
 Ceramics  
 Metal matrix **composites**  
**Nitriding**  
 (bone implant materials having films of **composition-gradient nitrided metal/calcium phosphate ceramics mixts.** with good adhesion to metal substrates)
- IT Metals, biological studies  
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)  
 (bone implant materials having films of **composition-gradient nitrided metal/calcium phosphate ceramics mixts.** with good adhesion to metal substrates)
- IT Nitrides  
 RL: DEV (Device component use); FMU (Formation, unclassified); THU (Therapeutic use); BIOL (Biological study); FORM (Formation, nonpreparative); USES (Uses)  
 (bone implant materials having films of **composition-gradient nitrided metal/calcium phosphate ceramics mixts.** with good adhesion to metal substrates)
- IT Prosthetic materials and Prosthetics  
 (implants; bone implant materials having films of **composition-gradient nitrided metal/calcium phosphate ceramics mixts.** with good adhesion to metal substrates)
- IT Coating process  
 (plasma spraying; bone implant materials having films of **composition-gradient nitrided metal/calcium phosphate ceramics mixts.** with good adhesion to metal substrates)
- IT Titanium alloy, base  
 RL: DEV (Device component use); THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
 (substrate; bone implant materials having films of **composition-gradient nitrided metal/calcium phosphate ceramics mixts.** with good adhesion to metal substrates)
- IT 7440-32-6, Titanium, biological studies  
 RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)  
 (bone implant materials having films of **composition-gradient nitrided metal/calcium phosphate ceramics mixts.** with good adhesion to metal substrates)
- IT 25583-20-4, Titanium nitride  
 RL: DEV (Device component use); FMU (Formation, unclassified); THU (Therapeutic use); BIOL (Biological study); FORM (Formation, nonpreparative); USES (Uses)  
 (bone implant materials having films of **composition-gradient nitrided metal/calcium phosphate ceramics mixts.** with good adhesion to metal substrates)
- IT 1306-06-5, Hydroxyapatite **10103-46-5**, Calcium phosphate  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); THU (Therapeutic use);

BIOL (Biological study); PROC (Process); USES (Uses)  
(bone implant materials having films of **composition-gradient**  
**nitrided metal**/calcium phosphate ceramics  
**mixts.** with good adhesion to metal substrates)

L56 ANSWER 5 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:1075078 HCAPLUS

DOCUMENT NUMBER: 142:417084

TITLE: Fabrication of novel hydroxyapatite/titanium  
**composite** coating using rf reactive  
plasma spraying

AUTHOR(S): Yokogawa, Y.; Inagaki, M.; Kameyama, T.

CORPORATE SOURCE: Ceramic Research Institute, National Institute  
of Advanced Industrial Science and Technology,  
Aichi, 463-8560, Japan

SOURCE: Ceramic Engineering and Science Proceedings  
(2004), 25(4), 555-564

CODEN: CESPDK; ISSN: 0196-6219

PUBLISHER: American Ceramic Society

DOCUMENT TYPE: Journal

LANGUAGE: English

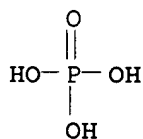
AB Novel hydroxyapatite (HAp) / titanium (Ti) functionally gradient  
**composite** material has been developed by new plasma spraying  
technique using radio-frequency (rf) thermal plasma spraying method.  
Plasma sprayed HAp coating on titanium substrate has been used for  
hip prostheses and dental implant; however, there is a in vivo  
problem of loosening. HAp coatings with sufficient thickness and  
excellent adhesion to the Ti substrate have been strongly demanded.  
The plasma-sprayed process is specified by the associated processing  
parameters (particle size of HAp powder, carrier gas rate, plasma  
power, and spraying time et al.) where these influence the  
properties of the resultant deposits. To improve the stability in  
vivo, the highly oriented HAp coatings were prepared by rf. thermal  
plasma method, and the degree of this orientation was little  
affected by RF input power while it showed a tendency to increase  
with an increase in the substrate temperature during spraying. To improve  
bond strength of HAp coatings to titanium substrate, the HAp/Ti  
functionally gradient **composite** coating on Ti substrates  
was successfully prepared. The ratio of HA and Ti powders supplied  
into the plasma was precisely controlled by two micro-feeders so as  
to change the coating **composition** from Ti-rich to HA-rich  
toward the upper layer, and the thickness of HAp/Ti  
**composite** layer was 50  $\mu\text{m}$ . Above that, only HAp was  
applied to produce HAp layer 100  $\mu\text{m}$  thick on the top. The bond  
strength between HAp layer and Ti substrate was remarkably improved.  
It was also found to be depended on the partial **nitriding**  
of Ti deposits using rf reactive plasma spraying. When sprayed with  
1.8% N<sub>2</sub> added at 27 kW, the bond strength of the obtained HA/Ti  
**composite** coatings reached 65.3 MPa. From the results of  
XRD and SEM anal., titanium nitrides were formed in the titanium  
deposits sprayed with plasma gas containing N<sub>2</sub>.

IT 7758-87-4, TCP

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)  
(fabrication of novel hydroxyapatite/titanium **composite**  
coating using rf reactive plasma spraying)

RN 7758-87-4 HCAPLUS

CN Phosphoric acid, calcium salt (2:3) (9CI) (CA INDEX NAME)



● 3/2 Ca

CC 63-7 (Pharmaceuticals)

IT Hip

(artificial; fabrication of novel hydroxyapatite/titanium **composite** coating using rf reactive plasma spraying)

IT Adhesion, physical

**Nitriding**

(fabrication of novel hydroxyapatite/titanium **composite** coating using rf reactive plasma spraying)

IT Prosthetic materials and Prosthetics

(implants; fabrication of novel hydroxyapatite/titanium **composite** coating using rf reactive plasma spraying)

IT Coating process

(plasma spraying; fabrication of novel hydroxyapatite/titanium **composite** coating using rf reactive plasma spraying)

IT 7758-87-4, TCP

RL: FMU (Formation, unclassified); FORM (Formation, nonpreparative)  
(fabrication of novel hydroxyapatite/titanium **composite** coating using rf reactive plasma spraying)

IT 1306-06-5, Hydroxyapatite 7440-32-6, Titanium, biological studies

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); THU (Therapeutic use); BIOL (Biological study); PROC (Process); USES (Uses)

(fabrication of novel hydroxyapatite/titanium **composite** coating using rf reactive plasma spraying)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L56 ANSWER 6 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:650265 HCAPLUS

DOCUMENT NUMBER: 141:159883

TITLE: **Composite** material and electrodes made therefrom for lithium battery cathode

INVENTOR(S): Wang, Liya; Xu, Chuanjing; Miller, John M.

PATENT ASSIGNEE(S): T/J Technologies, Inc., USA

SOURCE: PCT Int. Appl., 16 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

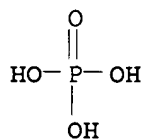
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
WO 2004068616	A2	20040812	WO 2004-US2470	20040129

WO 2004068616 A3 20041028  
 W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
 KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
 MX, MZ, NA, NI  
 US 2004185343 A1 20040923 US 2004-766385 200401  
 28  
 CA 2514957 A1 20040812 CA 2004-2514957 200401  
 29  
 EP 1595306 A2 20051116 EP 2004-706469 200401  
 29  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
 PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU,  
 SK  
 JP 2006516803 T 20060706 JP 2006-503129 200401  
 29  
 PRIORITY APPLN. INFO.: US 2003-443663P P 200301  
 30  
 US 2004-766385 A 200401  
 28  
 WO 2004-US2470 W 200401  
 29

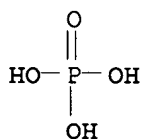
AB A **composite** material having utility as a cathode material  
 for a lithium ion battery includes a first component which is a  
 metal phosphate and a second component which is a **metal**  
**nitride**, a **metal oxynitride**, or a  
**mixture** of the two. The second component is coated on, or  
 dispersed through the bulk of, the first component. The metal  
 phosphate may be a lithiated metal phosphate and may be based upon  
 one or more transition metals. Also disclosed is a method for  
 preparing the material as well as electrodes fabricated from the  
 material and lithium ion cells which include such electrodes.  
 IT 10124-54-6, Manganese phosphate 10402-24-1, Iron  
 phosphate 14542-94-0, Vanadium phosphate  
 RL: DEV (Device component use); USES (Uses)  
 (**composite** material and electrodes made therefrom for  
 lithium battery cathode)  
 RN 10124-54-6 HCAPLUS  
 CN Phosphoric acid, manganese salt (8CI, 9CI) (CA INDEX NAME)





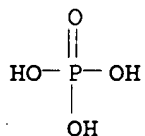
●x Mn(x)

RN 10402-24-1 HCAPLUS  
CN Phosphoric acid, iron salt (8CI, 9CI) (CA INDEX NAME)



●x Fe(x)

RN 14542-94-0 HCAPLUS  
CN Phosphoric acid, vanadium salt (8CI, 9CI) (CA INDEX NAME)



●x V(x)

IC ICM H01M  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72  
ST lithium battery cathode **composite** material  
IT **Ball milling**  
Battery cathodes  
(**composite** material and electrodes made therefrom for  
lithium battery cathode)  
IT Nitrides  
Olivine-group minerals  
Transition **metal nitrides**  
RL: DEV (Device component use); USES (Uses)  
(**composite** material and electrodes made therefrom for  
lithium battery cathode)  
IT Secondary batteries  
(lithium; **composite** material and electrodes made  
therefrom for lithium battery cathode)  
IT **Oxynitrides**

Phosphates, uses

RL: DEV (Device component use); USES (Uses)  
(**metal**; **composite** material and electrodes  
made therefrom for lithium battery cathode)

IT Machining  
(**milling**; **composite** material and electrodes  
made therefrom for lithium battery cathode)

IT 7664-41-7, Ammonia, processes  
RL: CPS (Chemical process); PEP (Physical, engineering or chemical  
process); PROC (Process)  
(**composite** material and electrodes made therefrom for  
lithium battery cathode)

IT 7664-38-2D, Phosphoric acid, transition metal compds.  
**10124-54-6**, Manganese phosphate **10402-24-1**, Iron  
phosphate **14542-94-0**, Vanadium phosphate 77641-62-4,  
Nasicon

RL: DEV (Device component use); USES (Uses)  
(**composite** material and electrodes made therefrom for  
lithium battery cathode)

IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7440-03-1,  
Niobium, uses 7440-32-6, Titanium, uses 7440-67-7, Zirconium,  
uses

RL: MOA (Modifier or additive use); USES (Uses)  
(**dopant**; **composite** material and electrodes  
made therefrom for lithium battery cathode)

L56 ANSWER 7 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:589102 HCAPLUS

DOCUMENT NUMBER: 141:126371

TITLE: Ionically conductive **composites** for  
protection of active metal anodes in batteries  
INVENTOR(S): Visco, Steven J.; Nimon, Yevgeniy S.; Katz,  
Bruce D.

PATENT ASSIGNEE(S): Polyplus Battery Company, USA

SOURCE: U.S. Pat. Appl. Publ., 23 pp., Cont.-in-part of  
U.S. Ser. No. 686,189.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 5

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2004142244	A1	20040722	US 2003-731771	200312 05
US 2004126653	A1	20040701	US 2003-686189	200310 14
US 2004191617	A1	20040930	US 2004-772228	200402 03
US 2004197641	A1	20041007	US 2004-772157	200402 03
WO 2005038962	A2	20050428	WO 2004-US33372	200410 08

WO 2005038962

A3

20051229

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,  
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,  
 KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
 MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD,  
 SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
 VC, VN, YU, ZA, ZM, ZW  
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,  
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,  
 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL,  
 PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
 GW, ML, MR, NE, SN, TD, TG.

PRIORITY APPLN. INFO.:

US 2002-418899P

P

200210  
15

US 2003-686189

A2

200310  
14

US 2003-511710P

P

200310  
14

US 2003-518948P

P

200311  
10

US 2003-526662P

P

200312  
02

US 2003-527098P

P

200312  
03

US 2003-731771

A2

200312  
05

US 2004-536688P

P

200401  
14

US 2004-536689P

P

200401  
14

US 2004-772228

A

200402  
03

AB Disclosed are ionically conductive **composites** for protection of active metal anodes and methods for their fabrication. The **composites** may be incorporated in active metal anode structures and battery cells. In accordance with the invention, the properties of different ionic conductors are combined in a **composite** material that has the desired properties of high overall ionic conductivity and chemical stability towards the anode, the

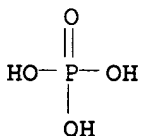
cathode and ambient conditions encountered in battery manufacturing The **composite** is capable of protecting an active metal anode from deleterious reaction with other battery components or ambient conditions while providing a high level of ionic conductivity to facilitate manufacture and/or enhance performance of a battery cell in which the **composite** is incorporated.

IT 10377-52-3

RL: TEM (Technical or engineered material use); USES (Uses)  
(ionically conductive **composites** for protection of  
active metal anodes in batteries)

RN 10377-52-3 HCAPLUS

CN Phosphoric acid, trilithium salt (8CI, 9CI) : (CA INDEX NAME)



●3 Li

IC : ICM H01M002-16

INCL 429246000; 429320000; 429322000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 57

ST battery anode active metal protection ionically conductive  
**composite**

IT Halides

**Nitrides**

RL: TEM (Technical or engineered material use); USES (Uses)  
(active **metal**; ionically conductive **composites**  
for protection of active metal anodes in batteries)

IT Metals, uses

RL: DEV (Device component use); USES (Uses)  
(active; ionically conductive **composites** for protection  
of active metal anodes in batteries)

IT Battery anodes

Ceramics

**Composites**

Glass ceramics

Ionic conductivity

Ionic conductors

(ionically conductive **composites** for protection of  
active metal anodes in batteries)

IT Secondary batteries

(lithium; ionically conductive **composites** for  
protection of active metal anodes in batteries)

IT Phosphate glasses

RL: TEM (Technical or engineered material use); USES (Uses)  
(**oxynitride**, active **metal**; ionically  
conductive **composites** for protection of active metal  
anodes in batteries)

IT Glass, uses

RL: TEM (Technical or engineered material use); USES (Uses)  
(**oxynitride**, phosphorus **oxynitride**, active  
**metal**; ionically conductive **composites** for

- protection of active metal anodes in batteries)
- IT Group VA element compounds  
RL: TEM (Technical or engineered material use); USES (Uses)  
(phosphides, active metal; ionically conductive **composites** for protection of active metal anodes in batteries)
- IT Sputtering  
(radio-frequency; ionically conductive **composites** for protection of active metal anodes in batteries)
- IT Lithium alloy, base  
RL: DEV (Device component use); USES (Uses)  
(ionically conductive **composites** for protection of active metal anodes in batteries)
- IT 1310-53-8, Germania, uses 1314-23-4, Zirconia, uses 1314-56-3, Phosphorus oxide (P2O5), uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 12024-21-4, Gallium oxide (Ga2O3) 12057-24-8, Lithium oxide (Li2O), uses 13463-67-7, Titania, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(glass ceramic; ionically conductive **composites** for protection of active metal anodes in batteries)
- IT 7439-93-2, Lithium, uses  
RL: DEV (Device component use); USES (Uses)  
(ionically conductive **composites** for protection of active metal anodes in batteries)
- IT 1308-80-1, Copper nitride cu3n 7440-50-8, Copper, uses 7447-41-8; Lithium chloride (LiCl), uses 7550-35-8, Lithium bromide 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide 10377-52-3 12024-22-5, Gallium sulfide ga2s3 12025-34-2, Germanium sulfide ges2 12057-29-3, Lithium phosphide li3p 12136-58-2, Lithium sulfide (Li2S) 13759-10-9, Silicon sulfide sis2 26134-62-3, Lithium nitride (Li3N) 70780-99-3, Lisicon 77641-62-4, Nasicon 184905-46-2, Lithium nitrogen phosphorus oxide  
RL: TEM (Technical or engineered material use); USES (Uses)  
(ionically conductive **composites** for protection of active metal anodes in batteries)
- IT 11138-49-1, Sodium  $\beta$ -alumina 37220-89-6, Lithium  $\beta$ -alumina  
RL: TEM (Technical or engineered material use); USES (Uses)  
(of  $\beta$ -alumina type; ionically conductive **composites** for protection of active metal anodes in batteries)

L56 ANSWER 8 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:355267 HCAPLUS  
DOCUMENT NUMBER: 140:360340  
TITLE: Ionically conductive **composites** for protection of active metal anodes of batteries  
INVENTOR(S): Visco, Steven, Jr.; Nimon, Yevgeniy S.; Katz, Bruce D.  
PATENT ASSIGNEE(S): Polyplus Battery Company, USA  
SOURCE: PCT Int. Appl., 47 pp.  
CODEN: PIXXD2  
DOCUMENT TYPE: Patent  
LANGUAGE: English  
FAMILY ACC. NUM. COUNT: 5  
PATENT INFORMATION:

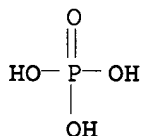
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
-----				

WO 2004036669	A2	20040429	WO 2003-US33457	200310 14
WO 2004036669	A3	20050324		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
CA 2502438	A1	20040429	CA 2003-2502438	200310 14
AU 2003301383	A1	20040504	AU 2003-301383	200310 14
US 2004131944	A1	20040708	US 2003-686041	200310 14
EP 1552572	A2	20050713	EP 2003-809186	200310 14
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK			
BR 2003015274	A	20050823	BR 2003-15274	200310 14
CN 1726608	A	20060125	CN 2003-80106146	200310 14
JP 2006503416	T	20060126	JP 2004-545584	200310 14
PRIORITY APPLN. INFO.:			US 2002-418899P	P 200210 15
			WO 2003-US33457	W 200310 14

AB Disclosed are ionically conductive **composites** for protection of active metal anodes and methods for their fabrication. The **composites** may be incorporated in active metal anode structures and battery cells. In accordance with the invention, the properties of different ionic conductors are combined in a **composite** material that has the desired properties of high overall ionic conductivity and chemical stability towards the anode, the cathode and ambient conditions encountered in battery manufacturing. The **composite** is capable of protecting an active metal anode from deleterious reaction with other battery components or ambient conditions while providing a high level of ionic conductivity to facilitate manufacture and/or enhance performance of a battery cell in which the

**composite** is incorporated.

- IT 10377-52-3, Trilithium phosphate  
 RL: DEV (Device component use); USES (Uses)  
 (ionically conductive **composites** for protection of  
 active metal anodes of batteries)  
 RN 10377-52-3 HCAPLUS  
 CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

- IC ICM H01M004-00  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST battery active metal anode protection ionically conductive  
**composite**  
 IT Glass, uses  
 RL: DEV (Device component use); USES (Uses)  
 (P-based; ionically conductive **composites** for  
 protection of active metal anodes of batteries)  
 IT Halides  
 RL: DEV (Device component use); USES (Uses)  
 (active metal halides; ionically conductive **composites**  
 for protection of active metal anodes of batteries)  
 IT **Nitrides**  
 RL: DEV (Device component use); USES (Uses)  
 (active **metal nitrides**; ionically conductive  
**composites** for protection of active metal anodes of  
 batteries)  
 IT Glass, uses  
 RL: DEV (Device component use); USES (Uses)  
 (active **metal phosphorus oxynitride**;  
 ionically conductive **composites** for protection of  
 active metal anodes of batteries)  
 IT Selenides  
 RL: DEV (Device component use); USES (Uses)  
 (glass; ionically conductive **composites** for protection  
 of active metal anodes of batteries)  
 IT Battery anodes  
**Composites**  
 Glass ceramics  
 Ionic conductivity  
 (ionically conductive **composites** for protection of  
 active metal anodes of batteries)  
 IT Alkali metals, uses  
 Alkaline earth metals  
 Sulfide glasses  
 Transition metals, uses  
 RL: DEV (Device component use); USES (Uses)  
 (ionically conductive **composites** for protection of  
 active metal anodes of batteries)  
 IT Group VA element compounds

- RL: DEV (Device component use); USES (Uses)  
(phosphides, active metal phosphides; ionically conductive **composites** for protection of active metal anodes of batteries)
- IT Glass, uses  
RL: DEV (Device component use); USES (Uses)  
(selenide; ionically conductive **composites** for protection of active metal anodes of batteries)
- IT Lithium alloy, base  
RL: DEV (Device component use); USES (Uses)  
(ionically conductive **composites** for protection of active metal anodes of batteries)
- IT 7440-55-3, Gallium, uses 7440-56-4, Germanium, uses  
RL: DEV (Device component use); USES (Uses)  
(glass; ionically conductive **composites** for protection of active metal anodes of batteries)
- IT 1308-80-1, Copper nitride  $\text{Cu}_3\text{N}$  1310-53-8, Germanium oxide ( $\text{GeO}_2$ ), uses 1313-49-1, Zinc nitride  $\text{Zn}_3\text{N}_2$  1314-23-4, Zirconia, uses 1314-56-3, Phosphorus oxide ( $\text{P}_2\text{O}_5$ ), uses 7439-93-2, Lithium, uses 7447-41-8, Lithium chloride ( $\text{LiCl}$ ), uses 7550-35-8, Lithium bromide ( $\text{LiBr}$ ) 7553-56-2, Iodine, uses 7631-86-9, Silica, uses 7723-14-0, Phosphorus, uses 7726-95-6, Bromine, uses 7782-41-4, Fluorine, uses 7782-50-5, Chlorine, uses 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide ( $\text{LiI}$ ) 10377-52-3, Trilithium phosphate 12024-22-5, Gallium sulfide  $\text{Ga}_2\text{S}_3$  12025-34-2, Germanium sulfide  $\text{GeS}_2$  12033-89-5, Silicon nitride, uses 12057-29-3, Lithium phosphide  $\text{Li}_3\text{P}$  12136-58-2, Dilithium sulfide 13463-67-7, Titania, uses 13759-10-9, Silicon sulfide  $\text{SiS}_2$  24304-00-5, Aluminum nitride  $\text{AlN}$  25014-15-7, Poly(2-vinylpyridine) 26134-62-3, Lithium nitride ( $\text{Li}_3\text{N}$ ) 37245-77-5, Iron nitride 55326-68-6, Cobalt nitride 55574-97-5, Tin nitride 70780-99-3, Lisicon 77641-62-4, Nasicon 203402-92-0, Lithium nitride phosphate  
RL: DEV (Device component use); USES (Uses)  
(ionically conductive **composites** for protection of active metal anodes of batteries)
- IT 11138-49-1, Sodium  $\beta$ -alumina 37220-89-6, Lithium  $\beta$ -alumina  
RL: DEV (Device component use); USES (Uses)  
(of  $\beta$ -alumina type; ionically conductive **composites** for protection of active metal anodes of batteries)

L56 ANSWER 9 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:278268 HCAPLUS

DOCUMENT NUMBER: 141:162713

TITLE: Synthesis and characterization of  $\text{TiOxNy}$  assembled in **oxynitrided** mesoporous silica MCM-41

AUTHOR(S): Zheng, Shan; Li, Zhengping; Gao, Lian

CORPORATE SOURCE: Shanghai Institute of Ceramics, State Key Lab of High Performance Ceramics and Superfine Microstructure, Chinese Academy of Sciences, Shanghai, 200050, Peop. Rep. China

SOURCE: Materials Chemistry and Physics (2004), 85(1), 195-200

CODEN: MCHPDR; ISSN: 0254-0584

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Ti oxynitride ( $\text{TiOxNy}$ ) with varying nitrogen contents assembled in



the pores of mesoporous material was achieved by nitriding TiO<sub>2</sub>-modified MCM-41 under flowing NH<sub>3</sub> atmosphere. XRD, XPS, N<sub>2</sub> adsorption-desorption isotherms and UV-visible spectra are employed to characterize the structure of the **composite** materials. Ti oxynitride is formed and crystallized at 700° when the nitridation time is 3 h. The MCM-41 host is also nitrided inevitably, while the mesostructure is still preserved. The effects of nitridation temperature on the formation of Ti oxynitride and structure of MCM-41 are systematically discussed.

CC 66-3 (Surface Chemistry and Colloids)

Section cross-reference(s): 49, 57

IT Porous materials

(mesoporous, MCM-41; synthesis and characterization of TiOxNy assembled in **oxynitrided** mesoporous silica MCM-41)

IT 7631-86-9, Silica, processes

RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(mesoporous; synthesis and characterization of TiOxNy assembled in **oxynitrided** mesoporous silica MCM-41)

IT 37271-26-4P, Titanium oxynitride

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(synthesis and characterization of TiOxNy assembled in **oxynitrided** mesoporous silica MCM-41)

IT 7664-41-7, Ammonia, reactions 13463-67-7, Titanium oxide (TiO<sub>2</sub>), reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(synthesis and characterization of TiOxNy assembled in **oxynitrided** mesoporous silica MCM-41)

REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 10 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:3712 HCAPLUS

DOCUMENT NUMBER: 140:82301

TITLE: Prosthetic devices having diffusion-hardened surfaces and bioceramic coatings

INVENTOR(S): Hunter, Gordon; Gupta, Harsh; Heuer, Daniel; Long, Marc; Davidson, James; Mishra, Ajit

PATENT ASSIGNEE(S): USA

SOURCE: U.S. Pat. Appl. Publ., 14 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 2004002766	A1	20040101	US 2002-185386	20020627
PRIORITY APPLN. INFO.:			US 2002-185386	20020627

AB A prosthetic device having at least part of its surface comprising a

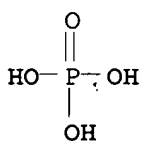
diffusion-hardened, in-situ formed **oxidation** or nitridation layer (from zirconium, hafnium, niobium, or tantalum) and with at least another part of its surface comprising a coating of bioceramic, preferably hydroxyapatite. The bone in-growth and on-growth promoting bioceramic further works synergistically with the diffusion-hardened surface in realizing a longer service life prosthetic. Thus, the prosthesis is formed essentially from titanium 74, niobium 13, and zirconium 13% by weight

IT 7757-93-9

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(prosthetic devices having diffusion-hardened surfaces and bioceramic coatings)

RN 7757-93-9 HCAPLUS

CN Phosphoric acid, calcium salt (1:1) (9CI) (CA INDEX NAME)



● Ca

IC ICM A61F002-30

INCL 623020210; 623022170; 623023530; 623023560

CC 63-7 (Pharmaceuticals)

IT Prosthetic materials and Prosthetics

(**composites**, implants; prosthetic devices having diffusion-hardened surfaces and bioceramic coatings)

IT 471-34-1, Calcium carbonate, biological studies 3164-34-9, Calcium tartrate 7440-03-1D, Niobium, **nitrided** or **oxidized** 7440-25-7D, Tantalum, **nitrided** or **oxidized** 7440-58-6D, Hafnium, **nitrided** or **oxidized** 7440-67-7D, Zirconium, **nitrided** or **oxidized** 7757-93-9 7778-18-9, Calcium sulfate

RL: THU (Therapeutic use); BIOL (Biological study); USES (Uses)  
(prosthetic devices having diffusion-hardened surfaces and bioceramic coatings)

L56 ANSWER 11 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:261756 HCAPLUS

DOCUMENT NUMBER: 138:275127

TITLE: Hybrid ceramic **composite** having insulating and structural ceramic layers

INVENTOR(S): Morrison, Jay A.; Burke, Michael A.; Merrill, Gary B.; Lane, Jay E.

PATENT ASSIGNEE(S): Siemens Westinghouse Power Corporation, USA

SOURCE: PCT Int. Appl., 28 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 8

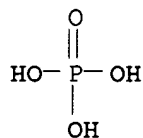
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	---	-----	-----	-----

-----  
 WO 2003026886 A2 20030403 WO 2002-US29343 200209  
 17  
 WO 2003026886 A3 20031106  
 W: CA, JP  
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE,  
 IT, LU, MC, NL, PT, SE, SK, TR  
 US 2003207155 A1 20031106 US 2001-963278 200109  
 26  
 US 6733907 B2 20040511  
 CA 2461699 A1 20030403 CA 2002-2461699 200209  
 17  
 EP 1432571 A2 20040630 EP 2002-799585 200209  
 17  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
 PT, IE, FI, CY, TR, BG, CZ, EE, SK  
 JP 2005503940 T 20050210 JP 2003-530502 200209  
 17  
 PRIORITY APPLN. INFO.: US 2001-963278 A 200109  
 26  
 US 1998-49328 A3 199803  
 27  
 US 1999-428197 A3 199910  
 27  
 US 2000-507794 A2 200002  
 22  
 WO 2002-US29343 W 200209  
 17

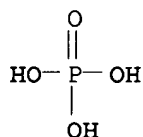
AB A hybrid ceramic structure, for use in high temperature environments, e.g., gas turbines, is made from an insulating layer of porous ceramic that is thermally stable at  $\leq 1700^\circ$  bonded to a high mech. strength structural layer of denser ceramic that is thermally stable at  $\leq 1200^\circ$ , where optional high temperature resistant adhesive can bond the layers together, where optional cooling ducts can be present in the structural layer and where hot gas can contact the insulating layer and cold gas can contact the structural layer.

IT 7784-30-7P, Aluminum phosphate 13778-59-1P, Lanthanum phosphate 13990-54-0P, Yttrium phosphate  
 RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
 (ceramic insulating layer; hybrid ceramic composites for gas turbines having insulating and structural ceramic layers)  
 RN 7784-30-7 HCAPLUS  
 CN Phosphoric acid, aluminum salt (1:1) (9CI) (CA INDEX NAME)



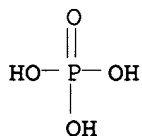
## ● Al

RN 13778-59-1 HCAPLUS  
 CN Phosphoric acid, lanthanum(3+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



## ● La(III)

RN 13990-54-0 HCAPLUS  
 CN Phosphoric acid, yttrium(3+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



## ● Y(III)

IC ICM B32B018-00  
 ICS C04B037-00  
 CC 57-9 (Ceramics)  
 Section cross-reference(s): 47  
 ST hybrid **composite** layered porous insulating dens ceramic  
 adhesive property; gas turbine layered hybrid ceramic  
**composite** adhesive heat resistant  
 IT Grains (particles)  
 (additives; hybrid ceramic **composites** for gas turbines  
 having insulating and structural ceramic layers)  
 IT Synthetic fibers  
 RL: CPS (Chemical process); MOA (Modifier or additive use); PEP  
 (Physical, engineering or chemical process); PROC (Process); USES  
 (Uses)  
 (aluminum oxide; hybrid ceramic **composites** for gas  
 turbines having insulating and structural ceramic layers)

IT Synthetic fibers  
 RL: CPS (Chemical process); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (aluminum yttrium zirconium oxide; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Molding of ceramics  
 (casting, pressure; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Hafnia  
 (ceramic insulating layer; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Vapor deposition process  
 (chemical, infiltration; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Vapor deposition process  
 (chemical; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Turbines  
 (combustor; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Coating materials  
 (erosion-resistant; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Ceramics  
 (fibers; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Spheres  
 (hollow, ceramics; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Sintering  
 (hot isostatic pressing; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Sintering  
 (hot pressing; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Adhesives  
 Annealing  
 Cooling  
 Densification  
 Firing (heat treating)  
 Glazing (ceramic)  
 Hybrid organic-inorganic materials  
**Nitriding**  
 Sintering  
 Sol-gel processing  
 Surface treatment  
 Thermal stability  
 Turbines  
 Vapor deposition process  
 (hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT **Composites**  
 (hybrid ceramic; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Polymers, processes  
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)  
 (**impregnation**; hybrid ceramic **composites** for

gas turbines having insulating and structural ceramic layers)

IT Materials  
(layered; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Filaments  
(monofilaments, additives; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Synthetic fibers  
RL: CPS (Chemical process); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(mullite; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Oxidation  
(of metal; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Thermal decomposition  
(of polymers; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Heat-resistant materials  
(porous ceramic insulating layer and adhesive; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Ceramics  
(porous, insulating layer; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Sintering  
(pressureless; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Coating materials  
(protective debonding interface; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Impregnation  
(slurry; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Ceramics  
(spheres, hollow; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Fibers  
RL: CPS (Chemical process); MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(tow, polycryst. multi-filament, additives; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT Diffusion  
(vacuum; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT 1302-93-8P, Mullite 1344-28-1P, Alumina, preparation 12005-21-9P, YAG  
RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)  
(ceramic insulating layer and fibers; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT 1304-28-5P, Barium oxide, preparation 1304-56-9P, Beryllia, preparation 1305-78-8P, Calcia, preparation 1306-38-3P, Ceria,

preparation 1308-38-9P, Chromia, preparation 1309-48-4P, Magnesia, preparation 1313-99-1P, Nickel oxide, preparation 1314-23-4P, Zirconia, preparation 1314-36-9P, Yttria, preparation 1314-37-0P, Ytterbium oxide 1327-43-1P, Aluminum magnesium silicon oxide 7631-86-9P, Silica, preparation 7784-30-7P, Aluminum phosphate 11099-11-9P, Vanadium oxide 11104-48-6P, Calcium aluminum oxide 11137-98-7P, Aluminum magnesium oxide 12009-21-1P, Barium zirconium oxide 12013-47-7P, Calcium zirconium oxide 12036-39-4P, Strontium zirconium oxide 12060-08-1P, Scandium oxide 12061-16-4P, Erbium oxide 12183-66-3P, Germanium hafnium oxide (GeHfO<sub>4</sub>) 12789-67-2P, Calcium tungsten oxide 13463-67-7P, Titania, preparation 13778-59-1P, Lanthanum phosphate 13990-54-0P, Yttrium phosphate 14940-68-2P, Zircon 37264-65-6P, Aluminum cerium oxide 39300-74-8P, Germanium yttrium oxide 39318-32-6P, Magnesium zirconium oxide 39354-08-0P, Aluminum nickel oxide 39407-05-1P, Praseodymium zirconium oxide 51331-24-9P, Lanthanum zirconium oxide 51680-38-7P, Hafnium lanthanum oxide 63439-80-5P, Calcium silicon oxide 111569-09-6P, Scandium zirconium oxide 123243-35-6P, Cerium germanium oxide 144716-88-1P, Calcium hafnium oxide 151640-29-8P, Barium hafnium oxide 155553-83-6P, Aluminum calcium silicon oxide 155553-85-8P, Magnesium silicon oxide 157822-16-7P, Hafnium magnesium oxide 165449-00-3P, Hafnium strontium oxide 170214-74-1P, Hafnium praseodymium oxide 223720-69-2P, Germanium zirconium oxide

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(ceramic insulating layer; hybrid ceramic **composites**

for gas turbines having insulating and structural ceramic layers)

IT 7440-44-0P, Carbon, preparation 137753-05-0P, Boron carbide nitride silicide

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(fiber coating; hybrid ceramic **composites** for gas

turbines having insulating and structural ceramic layers)

IT 1317-82-4P, Sapphire 1335-30-4P, Aluminum silicate

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(fibers; hybrid ceramic **composites** for gas turbines

having insulating and structural ceramic layers)

IT 10043-11-5P, Boron nitride, preparation

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(hybrid ceramic **composite** layer and coating; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT 409-21-2P, Silicon carbide, preparation

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(hybrid ceramic **composite** layer and filaments and coating; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT 12033-89-5P, Silicon nitride, preparation 64477-28-7P, Silicon carbide nitride

RL: CPS (Chemical process); DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); USES (Uses)

(hybrid ceramic **composite** layer and filaments; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT 11104-85-1P, Molybdenum silicide 11130-49-7P, Chromium carbide  
 11130-73-7P, Tungsten carbide 12007-23-7P, Hafnium boride  
 12033-62-4P, Tantalum nitride 12045-63-5P, Titanium boride  
 12045-64-6P, Zirconium boride 12069-85-1P, Hafnium carbide  
 12069-94-2P, Niobium carbide 12070-06-3P, Tantalum carbide  
 12070-08-5P, Titanium carbide 12070-14-3P, Zirconium carbide  
 12626-44-7P, Chromium silicide 12626-91-4P, Molybdenum boride  
 12627-57-5P, Molybdenum carbide 12648-34-9P, Niobium nitride  
 12653-55-3P, Chromium boride 12653-77-9P, Niobium boride  
 12653-85-9P, Tantalum boride 12653-88-2P, Vanadium boride  
 12738-91-9P, Titanium silicide 24304-00-5P, Aluminum nitride  
 25583-20-4P, Titanium nitride 25658-42-8P, Zirconium nitride  
 25817-87-2P, Hafnium nitride 37189-51-8P, Zirconium silicide  
 37245-81-1P, Molybdenum nitride 39336-13-5P, Niobium silicide  
 52953-72-7P, Tantalum silicide 60304-33-8P, Hafnium silicide

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(hybrid ceramic **composite** layer; hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

IT 7440-32-6, Titanium, uses 7440-42-8, Boron, uses 7440-67-7, Zirconium, uses

RL: MOA (Modifier or additive use); USES (Uses)

(hybrid ceramic **composites** for gas turbines having insulating and structural ceramic layers)

L56 ANSWER 12 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:830297 HCAPLUS

DOCUMENT NUMBER: 137:332079

TITLE: PTCR **composite** material for current limiters

INVENTOR(S): Ishida, Yoshihiko

PATENT ASSIGNEE(S): NGK Insulators, Ltd., Japan

SOURCE: U.S., 10 pp., Cont.-in-part of U.S. 6,300,862.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 6472972	B1	20021029	US 2000-570749	20000515
US 6300862	B1	20011009	US 2000-497845	20000203
EP 1122211	A1	20010808	EP 2001-300778	20010130
EP 1122211	B1	20031112		



R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,  
PT, IE, SI, LT, LV, FI, RO

JP 2001237104 A 20010831 JP 2001-25949

200102  
01

CN 1307342 A 20010808 CN 2001-103209

200102  
05

PRIORITY APPLN. INFO.:

US 2000-497845

A2

200002  
03

US 2000-570749

A

200005  
15

AB A reusable PTCR **composite** material with low room-temperature resistance, large resistance jump at the transition temperature, a transition temperature <200°, high heat resistance, and low power loss consists of a matrix of ceramic material having one of a cristobalite crystal structure and a tridymite crystal structure, each **doped** with an oxide of at least one of Be, B, Mg, Al, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge and W, and a conductive phase dispersed throughout the matrix. The conductive phase includes at least one of a **metal**, silicide, **nitride**, carbide and boride.

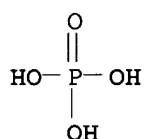
IT 7784-30-7, Aluminum phosphate (AlPO4)

RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(PTCR **composite** material for current limiters)

RN 7784-30-7 HCAPLUS

CN Phosphoric acid, aluminum salt (1:1) (9CI) (CA INDEX NAME)



● Al

IC ICM H01B001-02

ICS H01B001-06; H01B001-04; H01C007-10; H01C007-13

INCL 338-22R

CC 76-14 (Electric Phenomena)

Section cross-reference(s): 57

ST PTCR ceramic **composite** current limiter sintering

IT Ceramic **composites**

PTCR materials

(PTCR **composite** material for current limiters)

IT Binders

**Dopants**

Electrodes

Powders

Sintering aids

(for PTCR **composite** material for current limiters)

IT Epoxy resins, processes  
Polyimides, processes  
Polythiophenylenes  
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(for PTCR **composite** material for current limiters)

IT Transition metal silicides  
RL: TEM (Technical or engineered material use); USES (Uses)  
(for PTCR **composite** material for current limiters)

IT **Ball milling**  
Particle size  
Sintering  
(of PTCR **composite** material for current limiters)

IT Polyimides, processes  
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(polyamide-; for PTCR **composite** material for current limiters)

IT Polyamides, processes  
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(polyimide-; for PTCR **composite** material for current limiters)

IT Chromium alloy, base  
Cobalt alloy, base  
Iron alloy, base  
Molybdenum alloy, base  
Nickel alloy, base  
Niobium alloy, base  
Platinum alloy, base  
Rhodium alloy, base  
Titanium alloy, base  
Tungsten alloy, base  
Zirconium alloy, base  
RL: TEM (Technical or engineered material use); USES (Uses)  
(for PTCR **composite** material for current limiters)

IT 7631-86-9, Silica, processes 7784-30-7, Aluminum phosphate (AlPO<sub>4</sub>)  
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(PTCR **composite** material for current limiters)

IT 1344-28-1, Alumina, uses 14464-46-1, Cristobalite 14808-60-7, Quartz, uses 15468-32-3, Tridymite  
RL: TEM (Technical or engineered material use); USES (Uses)  
(PTCR **composite** material for current limiters)

IT 7732-18-5, Water, processes 7782-44-7, Oxygen, processes  
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(for PTCR **composite** material for current limiters)

IT 1303-86-2, Boron oxide (B<sub>2</sub>O<sub>3</sub>), uses 1304-56-9, Beryllium oxide (BeO), uses 1305-78-8, Calcium oxide (CaO), uses 1308-38-9, Chromium oxide (Cr<sub>2</sub>O<sub>3</sub>), uses 1309-48-4, Magnesium oxide (MgO), uses 1310-53-8, Germanium oxide (GeO<sub>2</sub>), uses 1313-99-1, Nickel oxide (NiO), uses 1314-13-2, Zinc oxide (ZnO), uses 1314-35-8,

- Tungsten oxide (WO<sub>3</sub>), uses 1314-62-1, Vanadium oxide (V<sub>2</sub>O<sub>5</sub>), uses 1332-37-2, Iron oxide, uses 1344-70-3, Copper oxide 11104-61-3, Cobalt oxide 11129-60-5, Manganese oxide 12024-21-4, Gallium oxide (Ga<sub>2</sub>O<sub>3</sub>) 12060-08-1, Scandium oxide (Sc<sub>2</sub>O<sub>3</sub>)  
RL: MOA (Modifier or additive use); USES (Uses)  
(for PTCR **composite** material for current limiters)
- IT 13463-67-7, Titanium oxide (TiO<sub>2</sub>), uses  
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)  
(for PTCR **composite** material for current limiters)
- IT 7439-98-7, Molybdenum, processes 9004-73-3, Polymethylsiloxane 12034-80-9, Niobium silicide (NbSi<sub>2</sub>) 12039-79-1, Tantalum silicide (TaSi<sub>2</sub>) 12136-78-6, Molybdenum silicide (MoSi<sub>2</sub>) 26062-94-2, Polybutyleneterephthalate  
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
(for PTCR **composite** material for current limiters)
- IT 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-06-4, Platinum, uses 7440-16-6, Rhodium, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-67-7, Zirconium, uses 11104-62-4, Cobalt silicide 11104-85-1, Molybdenum silicide 12626-44-7, Chromium silicide 12626-76-5, Iron silicide 12627-41-7, Tungsten silicide 12738-91-9, Titanium silicide 37189-51-8, Zirconium silicide 39336-13-5, Niobium silicide 52037-56-6, Vanadium silicide 52953-72-7, Tantalum silicide  
RL: TEM (Technical or engineered material use); USES (Uses)  
(for PTCR **composite** material for current limiters)
- IT 144-55-8, Sodium carbonate (NaHCO<sub>3</sub>), uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(sintering aid; PTCR **composite** material for current limiters)
- IT 298-14-6, Potassium carbonate (KHCO<sub>3</sub>)  
RL: MOA (Modifier or additive use); USES (Uses)  
(sintering aid; for PTCR **composite** material for current limiters)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 13 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:256646 HCAPLUS

DOCUMENT NUMBER: 136:265842

TITLE: **Composite** electrode material, its manufacture, and secondary battery using the material

INVENTOR(S): Yamada, Masayuki; Miyamoto, Miwa; Yokoyama, Eri; Koyama, Toshihiro; Saibara, Shoji; Aoyama, Shigeo

PATENT ASSIGNEE(S): Hitachi Maxell Ltd., Japan

SOURCE: PCT Int. Appl., 23 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

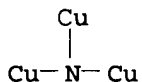
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----

AB The composite electrode material has a 0.01-30  $\mu$ m Li transition metal nitride cores coated with a Li intercalating or Li<sup>+</sup> conducting material, other than Li transition metal nitride, on their surface and is prepared by vapor phase deposition method to form the coating. The transition metal in the nitride is selected from Co, Cu, Fe, and Ni; the Li intercalating material is a carbonaceous material or a metal or its oxide or nitride. A secondary Li battery uses the material for cathode and/or anode.

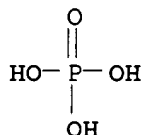
IT 1308-80-1, Copper nitride (Cu<sub>3</sub>N) 10377-52-3, Lithium phosphate  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(lithium intercalating and lithium conducting material coated lithium transition metal nitride for secondary lithium battery electrodes)

RN 1308-80-1 HCAPLUS

CN Copper nitride (Cu<sub>3</sub>N) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 10377-52-3 HCAPLUS  
 CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

IC ICM H01M004-58  
 ICS H01M004-02; H01M010-40; H01G009-00  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 ST secondary lithium battery electrode lithium transition **metal nitride**; electrode lithium transition **metal nitride** vapor phase coating  
 IT Vapor deposition process  
 (chemical; CVD deposition of coating materials on lithium transition **metal nitride** for secondary lithium battery electrodes)  
 IT Battery anodes  
 (lithium intercalating and lithium conducting material coated lithium transition **metal nitride** for secondary lithium battery electrodes)  
 IT Carbonaceous materials (technological products)  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (lithium intercalating and lithium conducting material coated lithium transition **metal nitride** for secondary lithium battery electrodes)  
 IT Sputtering  
 (sputtering deposition of coating materials on lithium transition **metal nitride** for secondary lithium battery electrodes)  
 IT Vapor deposition process  
 (vapor phase deposition of coating materials on lithium transition **metal nitride** for secondary lithium battery electrodes)  
 IT 174421-80-8P, Cobalt lithium nitride (Co<sub>0.4</sub>Li<sub>2.6</sub>N)  
 RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); PREP (Preparation); PROC (Process); USES (Uses)  
 (lithium intercalating and lithium conducting material coated lithium transition **metal nitride** for secondary lithium battery electrodes)  
 IT 1308-80-1, Copper nitride (Cu<sub>3</sub>N) 7429-90-5, Aluminum, uses 10377-52-3, Lithium phosphate 63985-45-5, Lithium orthosilicate 113443-18-8, Silicon oxide (SiO)  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (lithium intercalating and lithium conducting material coated lithium transition **metal nitride** for secondary lithium battery electrodes)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE

FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L56 ANSWER 14 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2001:581469 HCAPLUS  
 DOCUMENT NUMBER: 135:126119  
 TITLE: Ceramic matrix **composites** with  
 positive temperature coefficient (PTC) of  
 resistance for current limiters  
 INVENTOR(S): Ishida, Yoshihiko  
 PATENT ASSIGNEE(S): Ngk Insulators, Ltd., Japan  
 SOURCE: Eur. Pat. Appl., 16 pp.  
 CODEN: EPXXDW  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 2  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1122211	A1	20010808	EP 2001-300778	200101 30
EP 1122211	B1	20031112		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 6300862	B1	20011009	US 2000-497845	200002 03
US 6472972	B1	20021029	US 2000-570749	200005 15
PRIORITY APPLN. INFO.:			US 2000-497845	A 200002 03
			US 2000-570749	A 200005 15

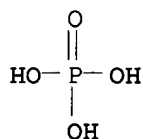
AB The PTC **composites** include a matrix of ceramic having one of a cristobalite crystal structure and a tridymite crystal structure (SiO<sub>2</sub> and AlPO<sub>4</sub>), each **doped** with 0.1-20 mol.% of an oxide of  $\geq 1$  of Be, B, Mg, Al, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, and W, and 10-45 volume% of a conductive phase dispersed throughout the matrix. The preferred oxide is a tungstate present in an amount of 1-5 mol.% in the matrix phase. The conductive phase includes  $\geq 1$  of a **metal**, silicide, **nitride**, carbide, and boride of Ti, Zr, V, Nb, Ta, Cr, Mo, W, Co, or Fe. The materials can also contain a polymer to make it more flexible, e.g., polymethyl siloxane, epoxy resin, polyimide, polybutylene terephthalate, polyphenylene sulfide, and polyamideimide. The PTC material further comprises a **composite** electrode layer formed on at least one surface of said PTC material, comprising a matrix material and a conductive component. The thickness of said **composite** electrode is  $< 50$  % of the thickness of said PTC material.

IT 7784-30-7, Aluminum phosphate (AlPO<sub>4</sub>)  
 RL: TEM (Technical or engineered material use); USES (Uses)

(matrix of ceramic **composite**, cristobalite and tridymite phases; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)

RN 7784-30-7 HCAPLUS

CN Phosphoric acid, aluminum salt (1:1) (9CI) (CA INDEX NAME)



● A1

IC ICM C01B025-36

ICS C04B035-14; H01C007-02

CC 57-2 (Ceramics)

ST ceramic conductive **composite** pos temp coeff; silica aluminum phosphate ceramic cristobalite tridymite

IT Epoxy resins, uses

Polyimides, uses

Polythiophenylenes

RL: MOA (Modifier or additive use); USES (Uses)

(binder; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)

IT Ceramic **composites**

(cristobalite and tridymite matrix; ceramic matrix

**composites** with pos. temperature coefficient (PTC) of resistance for current limiters)

IT Superconductor devices

(current limiters, ceramic conductive **composites**;

ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)

IT Oxides (inorganic), uses

RL: MOA (Modifier or additive use); USES (Uses)

(dopants of ceramic matrix; ceramic matrix

**composites** with pos. temperature coefficient (PTC) of resistance for current limiters)

IT Silicides

RL: TEM (Technical or engineered material use); USES (Uses)

(of Ti, Zr, V, Cr, W, Co, or Fe, conductive phase; ceramic matrix

**composites** with pos. temperature coefficient (PTC) of resistance for current limiters)

IT Borides

Carbides

Nitrides

RL: TEM (Technical or engineered material use); USES (Uses)

(of Ti, Zr, V, Nb, Ta, Cr, Mo, W, Co, or Fe, conductive phase;

ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)

IT Polyimides, uses

RL: MOA (Modifier or additive use); USES (Uses)

(polyamide-, binder; ceramic matrix **composites** with

pos. temperature coefficient (PTC) of resistance for current limiters)

IT Polyamides, uses

RL: MOA (Modifier or additive use); USES (Uses)

- (polyimide-, binder; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)
- IT Electric resistance  
(pos. temperature coefficient of; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)
- IT 9004-73-3, Polymethyl siloxane 24968-12-5, Polybutylene terephthalate  
RL: MOA (Modifier or additive use); USES (Uses)  
(binder; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)
- IT 7439-98-7, Molybdenum, uses 12034-80-9, Niobium disilicide 12039-79-1, Tantalum disilicide 12136-78-6, Molybdenum disilicide  
RL: TEM (Technical or engineered material use); USES (Uses)  
(conductive phase; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)
- IT 12737-86-9, tungstate  
RL: TEM (Technical or engineered material use); USES (Uses)  
(dopant of ceramic matrix; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)
- IT 1303-86-2, Boron oxide, uses 1344-28-1, Alumina, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(dopants of ceramic matrix; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)
- IT 7631-86-9, Silica, uses 7784-30-7; Aluminum phosphate (AlPO<sub>4</sub>)  
RL: TEM (Technical or engineered material use); USES (Uses)  
(matrix of ceramic **composite**, cristobalite and tridymite phases; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)
- IT 14464-46-1, Cristobalite 15468-32-3, Tridymite  
RL: TEM (Technical or engineered material use); USES (Uses)  
(phases of SiO<sub>2</sub> and AlPO<sub>4</sub>; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)
- IT 144-55-8, Carbonic acid monosodium salt, uses 298-14-6  
RL: MOA (Modifier or additive use); USES (Uses)  
(sintering aid; ceramic matrix **composites** with pos. temperature coefficient (PTC) of resistance for current limiters)
- REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 15 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:337068 HCAPLUS

DOCUMENT NUMBER: 131:8107

TITLE: Use of ion beam etching for producing topographical microstructure

AUTHOR(S): Koch, Marlen

CORPORATE SOURCE: Inst. Metallkunde, TU Bergakademie Freiberg, Freiberg, D-09599, Germany

SOURCE: Praktische Metallographie (1999), 36(5), 233-249  
CODEN: PMTLA5; ISSN: 0032-678X

PUBLISHER: Carl Hanser Verlag

DOCUMENT TYPE: Journal

LANGUAGE: German/English

AB The results of structure contrasting of **composites** (Cr coatings on brass, Cu electroplates on Cu or Fe) and complex compds. (Bi-Pb high-Tc superconductors) using both ion beam (IBE) and chemical etching (CE) techniques were compared. The obtained topog.



microstructures were analyzed by SEM, optical light , scanning tunnel, and atomic force microscopy. The effort for preparing the samples is similar for IBE and other etching techniques. With IBE, the structure formation is not affected by the electrochem. p.d. between the components of a **composite** resulting in a better structure contrasting. Therefore, IBE was established as a helpful tool for producing topog. microstructures of complex compds., especially if conventional structure contrasting methods failed.

CC 56-6 (Nonferrous Metals and Alloys)

IT Sputtering

Sputtering

(etching, ion-beam; ion beam etching for formation of structure contrasting of **composites**)

IT Metallography

(ion beam etching for formation of structure contrasting of **composites**)

IT Etching

Etching

(sputter, ion-beam; ion beam etching for formation of structure contrasting of **composites**)

IT 7440-47-3, Chromium, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(PVD-layer; ion beam etching for formation of structure contrasting of **composites**)

IT 7440-50-8, Copper, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(electrodeposit; ion beam etching for formation of structure contrasting of **composites**)

IT 131315-01-0, Bismuth calcium copper lead strontium oxide

(Bi<sub>1.8</sub>Ca<sub>2</sub>Cu<sub>3</sub>Pb<sub>0.4</sub>Sr<sub>2</sub>O<sub>10</sub>)

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(ion beam etching for formation of structure contrasting of **composites**)

IT 12597-69-2, Steel, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(oxynitrided; ion beam etching for formation of structure contrasting of **composites**)

REFERENCE COUNT:

15

THERE ARE 15 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L56 ANSWER 16 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1996:241701 HCAPLUS

DOCUMENT NUMBER: 124:295554

TITLE: Manufacture of corrosion-resistant ferrous metal **composites**

INVENTOR(S): Hirai, Eiji; Matsumura, Yoshio

PATENT ASSIGNEE(S): Nippon Packaging Kk, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08020877	A	19960123	JP 1994-155986	199407

PRIORITY APPLN. INFO.:

JP 1994-155986

07

199407

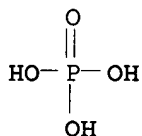
07

AB In the process, surface of ferrous metal substrates is **nitrided** to form Fe N compound-containing layers, and then the layers are **oxidized** in aqueous baths. containing NaOH, NaNO<sub>3</sub>, and NaNO<sub>2</sub> at 110-140° to modify at least surface parts of the layers and form Fe<sub>3</sub>O<sub>4</sub>-containing layers on the surface. Preferably, the baths further contain 1-5% Na<sub>2</sub>CO<sub>3</sub>, NaCN, Na<sub>3</sub>PO<sub>4</sub>, KNO<sub>3</sub>, Pb oxide, Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>, KCl, and/or NaCl. The **composites** have high wear resistance and mech. properties, e.g., fatigue strength, and homogeneous corrosion resistance.

IT 7632-05-5, Sodium phosphate  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (oxidation bath components; manufacture of corrosion-resistant ferrous metal **composites** by nitridation and oxidation)

RN 7632-05-5 HCAPLUS

CN Phosphoric acid, sodium salt (8CI, 9CI) (CA INDEX NAME)



●x Na

IC ICM C23C022-62  
 ICS C23C008-26; C23C008-40; C23C008-80; C23C022-78; C23C028-02

CC 55-7 (Ferrous Metals and Alloys)

ST corrosion resistance ferrous metal **composite**;  
**oxidn** nitridation ferrous metal surface; iron oxide formation corrosion prevention

IT Nitridation  
 (manufacture of corrosion-resistant ferrous metal **composites** by nitridation and **oxidation**)

IT Iron alloy, base  
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
 (manufacture of corrosion-resistant ferrous metal **composites** by nitridation and **oxidation**)

IT 1317-61-9P, Iron oxide (Fe<sub>3</sub>O<sub>4</sub>), preparation  
 RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (formation of, surface layer components; manufacture of corrosion-resistant ferrous metal **composites** by nitridation and **oxidation**)

IT 12732-02-4, SS400, processes 37268-90-9, S45C, processes 39462-15-2, SPCC, processes  
 RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)  
 (manufacture of corrosion-resistant ferrous metal **composites** by nitridation and **oxidation**)

IT 143-33-9, Sodium cyanide 497-19-8, Sodium carbonate, uses  
1310-73-2, Sodium hydroxide, uses 1335-25-7, Lead oxide  
7447-40-7, Potassium chloride, uses 7631-99-4, Sodium nitrate,  
uses 7632-00-0, Sodium nitrite 7632-05-5, Sodium  
phosphate 7647-14-5, Sodium chloride, uses 7757-79-1, Potassium  
nitrate, uses

RL: NUU (Other use, unclassified); USES (Uses)

(oxidation bath components; manufacture of corrosion-resistant  
ferrous metal **composites** by nitridation and  
oxidation)

L56 ANSWER 17 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1995:294612 HCAPLUS

DOCUMENT NUMBER: 122:87684

TITLE: Manufacture of alumina-containing, aluminum  
phosphate-bonded metal-coated fiber-reinforced  
refractories

INVENTOR(S): Belitskus, David L.; Boland, Daniel J.; Evans,  
W. Thomas; Kampert, William P.; Marra, Robert  
A.; Wieserman, Larry F.

PATENT ASSIGNEE(S): Aluminum Co. of America, USA

SOURCE: U.S., 11 pp. Cont.-in-part of U.S. Ser. No. 393,  
299.

CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
US 5371050	A	19941206	US 1991-680489	199104 04
US 6309994	B1	20011030	US 1989-393299	198908 14
PRIORITY APPLN. INFO.:			US 1989-393299	A2 198908 14

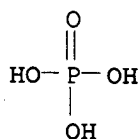
AB The method comprises dispersing Al<sub>2</sub>O<sub>3</sub> (average particle size .ltorsim.10  
µm) in an AlPO<sub>4</sub> solution, to obtain a slurry substantially free of  
SiO<sub>2</sub>, **impregnating** a substrate of fibers coated with a  
metal selected from Ni, W, Mo, Pt, Cu, Ag, Au, Pd, Co, Cr, and Ti  
with the slurry, and curing the **impregnated** substrate to  
form fiber-reinforced AlPO<sub>4</sub>-bonded **composite** materials.  
The fiber substrate may consist of SiC fibers electroless coated  
with nickel. The **composites** have high strength at high  
temps.

IT 7784-30-7, Aluminum phosphate

RL: TEM (Technical or engineered material use); USES (Uses)  
(binder; manufacture of aluminum phosphate-bonded metal-coated  
fiber-reinforced alumina refractories)

RN 7784-30-7 HCAPLUS

CN Phosphoric acid, aluminum salt (1:1) (9CI) (CA INDEX NAME)



● Al

IC ICM C04B035-76  
 INCL 501095000  
 CC 57-6 (Ceramics)  
 IT Synthetic fibers  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (boron **nitride**, **metal**-coated; manufacture of  
 aluminum phosphate-bonded metal-coated ceramic fiber-reinforced  
 alumina refractories)  
 IT Synthetic fibers  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (silicon **nitride**, **metal**-coated; manufacture of  
 aluminum phosphate-bonded metal-coated ceramic fiber-reinforced  
 alumina refractories)  
 IT 7784-30-7, Aluminum phosphate  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (binder; manufacture of aluminum phosphate-bonded metal-coated  
 fiber-reinforced alumina refractories)

L56 ANSWER 18 OF 18 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1993:174136 HCAPLUS  
 DOCUMENT NUMBER: 118:174136  
 TITLE: **Oxynitrided** spinel structure: effect  
 of an oxide environment  
 AUTHOR(S): Goeuriot, P.; Laurent-Fievez, F.;  
 Goeuriot-Launay, D.; Thevenot, F.  
 CORPORATE SOURCE: Ec. Norm. Super. Mines Saint-Etienne,  
 Saint-Etienne, 42023, Fr.  
 SOURCE: Journal of High Temperature Chemical Processes  
 (1992), 1(2), 165-79  
 CODEN: JHTPEM; ISSN: 1240-4292  
 DOCUMENT TYPE: Journal  
 LANGUAGE: French

AB Chemical and crystallog. stabilities of  $\gamma$ -ALON depend on the  
 solid environment in which it is dispersed. With alumina excess, a  
**composite** material alumina-ALON is obtained by  
 sintering-reaction between alumina and aluminum nitride. The spinel  
 phase obtained can dissolve alumina at  $\leq 1870^\circ$ ; above  
 this temperature, it changes into the tetragonal phase. Some sintering  
 agents were studied;  $\text{Y}_2\text{O}_3$  (0.04 mol.%) is necessary to densify the  
**composite** alumina-30 volume% ALON but delays the spinel  
 formation and enhances its decomposition by annealing at  
 1350-1550°. On the contrary, MgO stabilizes the spinel  
 structure from 1350°; **composites** were obtained by  
 sintering-reaction with fine microstructure.  
 CC 57-2 (Ceramics)  
 ST aluminum oxynitride alumina **composite**; spinel structure  
 alumina aluminum oxynitride **composite**  
 IT Ceramic materials and wares

(aluminum oxynitride-alumina **composite**, spinel structure in)  
 IT 58875-12-0, Aluminum oxynitride (ALON)  
 RL: USES (Uses)  
 (ceramic **composites**, with alumina, spinel structure in)  
 IT 1314-36-9, Yttria, uses  
 RL: USES (Uses)  
 (in sintering, of alumina-aluminum oxynitride **composites**, spinel phase stabilization in relation to)

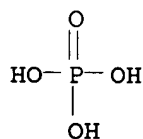
=> d 157 ibib abs hitstr hitind 1-9

L57 ANSWER 1 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 2006:1091109 HCAPLUS  
 DOCUMENT NUMBER: 145:442396  
 TITLE: Manufacture of Sm-Fe-N magnetic powder for bonded magnet  
 INVENTOR(S): Yamazaki, Minoru; Maekawa, Masaaki; Fujita, Katsuhiko; Ikemoto, Kunio  
 PATENT ASSIGNEE(S): Toda Kogyo Corp., Japan  
 SOURCE: Jpn. Kokai Tokkyo Koho, 20pp.  
 CODEN: JKXXAF  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Japanese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 2006283094	A	20061019	JP 2005-103617	20050331
PRIORITY APPLN. INFO.:			JP 2005-103617	20050331

AB The invention relates to a Sm-Fe-N magnetic power, which contains Ca 0.001-0.2, C 0.01-0.1, and P 0.01-0.5%. The manufacture of the Sm-Fe-N magnetic powder includes mixing Fe oxide with Sm oxide, conducting reduction reaction, mixing Ca to the powder **mixture** for diffusion reduction reaction to obtain Sm-Fe particles, **nitriding** to arriving at Sm-Fe-N particles, washing, **crushing** in the existence of phosphoric acid, and drying. The flow characteristics of the **mixture** of Sm-Fe-N particles and resin for manufacture of bonded magnet are improved.

IT 7558-79-4, Disodium hydrogenphosphate  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (for manufacture of Sm-Fe-N magnetic powder for bonded magnet)  
 RN 7558-79-4 HCAPLUS  
 CN Phosphoric acid, disodium salt (8CI, 9CI) (CA INDEX NAME)



● 2 Na

CC 56-4 (Nonferrous Metals and Alloys)

Section cross-reference(s): 77

IT **Nitriding**

(for manufacture of Sm-Fe-N magnetic powder for bonded magnet)

IT 124-38-9, Carbon dioxide, uses 7558-79-4, Disodium hydrogenphosphate

RL: NUU (Other use, unclassified); USES (Uses)

(for manufacture of Sm-Fe-N magnetic powder for bonded magnet)

L57 ANSWER 2 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2004:554939 HCAPLUS

DOCUMENT NUMBER: 142:362860

TITLE: Preparation and optical properties of europium or cerium **doped** zirconium oxynitrides

AUTHOR(S): Gutzov, S.; Lerch, M.

CORPORATE SOURCE: Department of Physical Chemistry, St. Kl. Ohridski University of Sofia, Sofia, 1126, Bulg.

SOURCE: Dokladi na Bulgarskata Akademiya na Naukite (2004), 57(2), 57-62

CODEN: DBANEH; ISSN: 0861-1459

PUBLISHER: Bulgarska Akademiya na Naukite

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The nitridation of zirconia at 1900° is discussed. The incorporation of N is facilitated by the absence of aliovalent cationic **dopants** which is verified by simple thermodyn. calcns. The effective equilibrium constant of N incorporation K 1900C varies between  $0.96 + 10^{-25}$  for rare earth or Ca **doped** zirconia oxynitrides and  $20 + 10^{-25}$  for Zr oxynitrides. The incorporated N affects the optical properties of Eu or Ce **doped** zirconia oxynitrides because of the presence of absorption features at 463-495 nm in Ce-containing materials and 530-550 nm in Eu-containing ceramics. Two qual. models for explanation of the color of the oxynitrides based on color center formation and  $\text{N}^{3-} \rightarrow \text{Zr}^{4+}$  ( $\text{Ce}^{4+}$ ) charge transfer transitions are proposed.

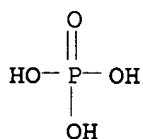
IT 13454-71-2, Cerium phosphate

RL: PRP (Properties)

(preparation and optical properties of europium or cerium **doped** zirconium oxynitrides)

RN 13454-71-2 HCAPLUS

CN Phosphoric acid, cerium(3+) salt (1:1) (8CI, 9CI) (CA INDEX NAME)



● Ce(III)

- CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)  
Section cross-reference(s): 75, 78
- ST prepn optical property europium cerium **doped** zirconium oxynitride
- IT Reflection spectra  
(UV-visible; preparation and optical properties of europium or cerium **doped** zirconium oxynitrides)
- IT Crystal vacancies  
(oxygen; preparation and optical properties of europium or cerium **doped** zirconium oxynitrides)
- IT Charge transfer transition  
Color centers  
Optical properties  
(preparation and optical properties of europium or cerium **doped** zirconium oxynitrides)
- IT UV and visible spectra  
(reflection; preparation and optical properties of europium or cerium **doped** zirconium oxynitrides)
- IT **Nitriding**  
(thermal; preparation and optical properties of europium or cerium **doped** zirconium oxynitrides)
- IT 7440-45-1, Cerium, properties 7440-53-1, Europium, properties  
RL: MOA (Modifier or additive use); PRP (Properties); USES (Uses)  
(preparation and optical properties of europium or cerium **doped** zirconium oxynitrides)
- IT 1314-23-4P, Zirconia, properties  
RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)  
(preparation and optical properties of europium or cerium **doped** zirconium oxynitrides)
- IT 1308-96-9, Europium oxide 13454-71-2, Cerium phosphate  
37311-45-8, Zirconium nitride oxide 189294-75-5, Cerium zirconium oxide (Ce<sub>0.07</sub>Zr<sub>0.93</sub>O<sub>2</sub>) 333968-22-2, Cerium zirconium nitride oxide (Ce<sub>0.07</sub>Zr<sub>0.93</sub>N<sub>0.07</sub>O<sub>1.9</sub>) 849230-43-9, Europium zirconium nitride oxide (Eu<sub>0.02</sub>Zr<sub>0.98</sub>N<sub>0.04</sub>O<sub>1.88</sub>) 849230-44-0, Zirconium nitride oxide (ZrN<sub>0.14</sub>O<sub>1.78</sub>)  
RL: PRP (Properties)  
(preparation and optical properties of europium or cerium **doped** zirconium oxynitrides)
- REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L57 ANSWER 3 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2003:445952 HCAPLUS  
DOCUMENT NUMBER: 139:300007  
TITLE: Initial oxynitridation of a Si(100) 2 + 1

surface by the annealing and low energy nitrogen ion exposure

AUTHOR(S): Kim, Ki-Jeong; Ihm, Kyuwook; Jeon, Cheolho; Hwang, Chan-Cuk; Kang, Tai-Hee; Kim, Bongsoo

CORPORATE SOURCE: Pohang Accelerator Laboratory (PLS), Pohang University of Science and Technology, Pohang, Kyungbuk, 790-784, S. Korea

SOURCE: Applied Surface Science (2003), 212-213, 625-629  
CODEN: ASUSEE; ISSN: 0169-4332

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The initial stage of the oxynitride on Si(100) 2 x 1 surface by the thermal annealing incorporated with the nitrogen ion was investigated using photoemission spectroscopy (PES). After growing about 20 Å thermal SiO<sub>2</sub> layer on Si(100) 2 x 1 surface, the authors implanted nitrogen ion with 200 eV ion energy on the surface at RT. Oxynitride and Si<sub>3</sub>N<sub>4</sub> are found to co-exist during the thermal nitridation. PES results of Si 2p and N 1s were shown that N(-Si<sub>2</sub>O) was a major component at 800° annealing. The oxygen of this oxynitride was dissolved as a volatile SiO as increasing the nitridation temperature more than 1000° and Si<sub>3</sub>N<sub>4</sub> became a majority components. Also, N 1s core-level spectra were shifted toward the low binding energy.

CC 76-9 (Electric Phenomena)

IT Composition

(XPS depth profile; of oxynitrided Si surface)

IT Annealing

(effects on interface structure; of oxynitrided Si surface)

IT Interfacial structure

X-ray photoelectron spectra

(of oxynitrided Si surface)

REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L57 ANSWER 4 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:163826 HCAPLUS

DOCUMENT NUMBER: 136:192852

TITLE: Oxynitridation of Si sidewalls in shallow-trench insulation on integrated circuits

INVENTOR(S): Leobandung, Effendi

PATENT ASSIGNEE(S): International Business Machines Corp., USA

SOURCE: U.S., 5 pp.  
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6352906	B1	20020305	US 2000-628864	20000728
PRIORITY APPLN. INFO.:				US 2000-628864
				20000728



AB The integrated-circuit wafers using shallow-trench insulation are improved when the Si walls of the active transistor area have an **oxynitrided** film grown on them to prevent diffusion loss of **doping** elements out of the transistor body, and preventing the associated shift in threshold voltage. The **oxynitrided** film typically contains 5-15% N, is >20 nm thick, and is grown on the etch-cleaned walls at .apprx.1000° in the presence of NO and N2O in the atmospheric

IC ICM H01L021-76

INCL 438435000

CC 76-3 (Electric Phenomena)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L57 ANSWER 5 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:460311 HCAPLUS

DOCUMENT NUMBER: 135:210742

TITLE: Synthesis of **oxynitrided** beta zeolite and its application in Knoevenagel reactions as solid base catalysts

AUTHOR(S): Ding, Yunjie; Xiong, Jianmin; Lu, Yuan; He, Xincheng; Lin, Liwu

CORPORATE SOURCE: Dalian Institute of Chemical Physics, The Chinese Academy of Sciences, Dalian, 116023, Peop. Rep. China

SOURCE: Cuihua Xuebao (2001), 22(3), 227-228  
CODEN: THHPD3; ISSN: 0253-9837

PUBLISHER: Kexue Chubanshe

DOCUMENT TYPE: Journal

LANGUAGE: English

OTHER SOURCE(S): CASREACT 135:210742

AB  $\beta$ -Zeolite oxynitride was obtained by heating  $\beta$ -zeolite **doped** with 2% Ru under NH<sub>3</sub> at 400° for up to 50 h. The nitrided zeolited successfully catalyzed the Knoevenagel reaction of PhCHO with NCCH<sub>2</sub>CO<sub>2</sub>Et.

CC 23-17 (Aliphatic Compounds)

IT Beta zeolites

RL: CAT (Catalyst use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(**oxynitrided**; synthesis of **oxynitrided** beta zeolite and its application in Knoevenagel reactions as solid base catalysts)

IT Knoevenagel reaction catalysts

(synthesis of **oxynitrided** beta zeolite and its application in Knoevenagel reactions as solid base catalysts)

IT 100-52-7, Benzaldehyde, reactions 105-56-6, Ethyl cyanoacetate

RL: RCT (Reactant); RACT (Reactant or reagent)

(synthesis of **oxynitrided** beta zeolite and its application in Knoevenagel reactions as solid base catalysts)

IT 2025-40-3P, Ethyl benzyldenecyanoacetate

RL: SPN (Synthetic preparation); PREP (Preparation)

(synthesis of **oxynitrided** beta zeolite and its application in Knoevenagel reactions as solid base catalysts)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L57 ANSWER 6 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1999:271429 HCAPLUS  
 DOCUMENT NUMBER: 130:313941  
 TITLE: **Oxynitrided composition**  
 based on an alkaline earth and tantalum or on an  
 alkaline earth and niobium, preparation methods  
 and use as dyeing pigment  
 INVENTOR(S): Diot, Nadege; Le Gendre, Laurent; Marchand,  
 Roger  
 PATENT ASSIGNEE(S): Rhodia Chimie, Fr.  
 SOURCE: PCT Int. Appl., 23 pp.  
 CODEN: PIXXD2  
 DOCUMENT TYPE: Patent  
 LANGUAGE: French  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9919408	A1	19990422	WO 1998-FR2170	199810 09
W: AU, CA, CN, JP, KR, MX, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
FR 2769612	A1	19990416	FR 1997-12769	199710 13
AU 9895444	A	19990503	AU 1998-95444	199810 09
ZA 9809320	A	19990420	ZA 1998-9320	199810 13
PRIORITY APPLN. INFO.:			FR 1997-12769	A 199710 13
			WO 1998-FR2170	W 199810 09

AB The **oxynitrided pigment composition** is based on an alkaline earth and at least one element selected from Ta and Nb, having a global **composition**  $Al+yM1-yO(7-3y-6x)/2N2x$ , where A = alkaline earth or rare earth, M = Ta or Nb or one of these two elements partially substituted by the other, and y and x are given by:  $0.33 \leq y \leq 0.5$  and  $0 < x \leq (7 - 3y)/6$ . Another **composition** based on Sr and Ta and/or Nb has a global **composition**  $Sr1+yM1-yO(7-3y)/2$ , where M = as above, and  $0.33 < y < 0.5$  and the Sr/Ta ratio is preferentially between 2.16 and 2.48. The rare earth is La and the alkaline earth element is Ba or Ca, and M may be partially substituted by Ti or Zr. The components are mixed and treated at sufficiently high temperature to induce decarbonation, then treated with NH<sub>3</sub> to form nitrides; alternatively, the elements are made to react with a nitride and the product of the reaction is then subjected to heat treatment. The pigment **compns.** are used to impart color to materials, e.g., plastics, paints, ceramics, glazes, paper, cosmetics, inks, mineral-based wall coverings, and surface finishes. Thus, a pigment **composition** was prepared from

SrCO<sub>3</sub> and Ta<sub>2</sub>O<sub>5</sub> 2.33 ratio by **grinding** in agate mortar, heating to 900° for 2 h to effect decarbonation, then to 1350° for 9 h to obtain a precursor Sr<sub>1.4</sub>Ta<sub>0.6</sub>O<sub>2.9</sub>; when the second heat treatment was carried out in NH<sub>3</sub>, the **composition** was Sr<sub>1.4</sub>Ta<sub>0.6</sub>O<sub>2.47</sub>N<sub>0.28</sub>.

- IC ICM C09C001-02  
ICS C08K003-00; C09D007-12; C04B033-14; D21H017-67; C09D011-00; A61K007-00; C14C011-00; C01G033-00; C01G035-00; C01B021-082
- CC 49-3 (Industrial Inorganic Chemicals)  
Section cross-reference(s): 37
- IT Heat treatment  
Nitriding  
Pigments, nonbiological  
(preparation of oxynitride **compns.** based on alkaline earths and rare earths and tantalum or niobium and use as pigments in materials)
- IT Plastics, processes  
RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(preparation of oxynitride **compns.** based on alkaline earths and rare earths and tantalum or niobium and use as pigments in materials)
- IT 223581-37-1P, Strontium tantalum oxide (Sr<sub>1.4</sub>Ta<sub>0.6</sub>O<sub>2.9</sub>)  
223581-41-7P, Strontium tantalum titanium oxide (Sr<sub>1.4</sub>Ta<sub>0.54</sub>Ti<sub>0.06</sub>O<sub>2.87</sub>) 223581-47-3P, Strontium tantalum titanium oxide (Sr<sub>1.4</sub>Ta<sub>0.5</sub>Ti<sub>0.10</sub>O<sub>2.85</sub>)  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(precursor, perovskite; preparation of oxynitride **compns.** based on alkaline earths and rare earths and tantalum or niobium and use as pigments in materials)
- IT 160716-91-6P, Calcium tantalum oxide (Ca<sub>1.33</sub>Ta<sub>0.67</sub>O<sub>3</sub>)  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(precursor; preparation of oxynitride **compns.** based on alkaline earths and rare earths and tantalum or niobium and use as pigments in materials)
- IT 223581-13-3P, Strontium tantalum nitride oxide (Sr<sub>1.4</sub>Ta<sub>0.6</sub>N<sub>0.10</sub>O<sub>2.75</sub>)  
223581-16-6P, Strontium tantalum nitride oxide (Sr<sub>1.4</sub>Ta<sub>0.6</sub>N<sub>0.28</sub>O<sub>2.47</sub>) 223581-19-9P, Strontium tantalum nitride oxide (Sr<sub>1.4</sub>Ta<sub>0.6</sub>N<sub>0.25</sub>O<sub>2.52</sub>) 223581-21-3P, Strontium tantalum nitride oxide (Sr<sub>1.4</sub>Ta<sub>0.6</sub>N<sub>0.37</sub>O<sub>2.34</sub>) 223581-24-6P, Strontium tantalum nitride oxide (Sr<sub>1.4</sub>Ta<sub>0.6</sub>N<sub>0.51</sub>O<sub>2.14</sub>) 223581-28-0P, Strontium tantalum nitride oxide (Sr<sub>1.4</sub>Ta<sub>0.6</sub>N<sub>0.47</sub>O<sub>2.2</sub>)  
223581-32-6P, Strontium tantalum nitride oxide (Sr<sub>1.4</sub>Ta<sub>0.6</sub>N<sub>0.70</sub>O<sub>1.85</sub>)  
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); PREP (Preparation); USES (Uses)  
(preparation of oxynitride **compns.** based on alkaline earths and rare earths and tantalum or niobium and use as pigments in materials)
- IT 223581-51-9P 223581-56-4P, Niobium strontium nitride oxide (Nb<sub>0.67</sub>Sr<sub>1.33</sub>N<sub>0.06</sub>O<sub>2.91</sub>) 223581-60-0P, Niobium strontium nitride oxide (Nb<sub>0.67</sub>Sr<sub>1.33</sub>N<sub>0.20</sub>O<sub>2.7</sub>) 223581-64-4P, Niobium strontium nitride oxide (Nb<sub>0.67</sub>Sr<sub>1.33</sub>N<sub>0.31</sub>O<sub>2.53</sub>) 223581-68-8P, Niobium strontium nitride oxide (Nb<sub>0.67</sub>Sr<sub>1.33</sub>N<sub>0.51</sub>O<sub>2.23</sub>)  
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)  
(preparation of oxynitride **compns.** based on alkaline earths and rare earths and tantalum or niobium and use as pigments in materials)
- IT 9003-07-0, Eltex PHV 001

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(preparation of oxynitride **compns.** based on alkaline earths and  
rare earths and tantalum or niobium and use as pigments in  
materials)

IT 1313-96-8, Niobium oxide (Nb2O5) 1314-61-0, Tantalum oxide (Ta2O5)  
1633-05-2, Strontium carbonate (SrCO3) 7664-41-7, Ammonia,  
reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of oxynitride **compns.** based on alkaline earths and  
rare earths and tantalum or niobium and use as pigments in  
materials)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR  
THIS RECORD. ALL CITATIONS AVAILABLE IN  
THE RE FORMAT

L57 ANSWER 7 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1997:396655 HCAPLUS

DOCUMENT NUMBER: 127:43489

TITLE: Manufacture of MOS transistor semiconductor  
device with lightly **doped** drain (LDD)  
structure

INVENTOR(S): Ueda, Takashi

PATENT ASSIGNEE(S): Sharp Corp., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	
JP 09129872	A	19970516	JP 1995-284988	199511 01
				199511 01

PRIORITY APPLN. INFO.: JP 1995-284988

AB In the manufacture, after forming a gate oxide film and a gate electrode  
on a Si substrate, the Si substrate is **oxynitrided** in 100%  
N2O or in N2O-N2 mixture atmospheric By forming the Si oxynitride film,  
etching of a gate electrode side wall is carried out without  
damaging the substrate.

IC ICM H01L029-78

ICS H01L021-336; H01L021-318

CC 76-3 (Electric Phenomena)

IT MOS transistors

(in manufacture of MOS transistor semiconductor device with lightly  
**doped** drain (LDD) structure)

IT 11105-01-4P, Silicon oxynitride

RL: DEV (Device component use); IMF (Industrial manufacture); PREP  
(Preparation); USES (Uses)

(in manufacture of MOS transistor semiconductor device with lightly  
**doped** drain (LDD) structure)

IT 10024-97-2, Nitrogen oxide (n2o), uses

RL: NUU (Other use, unclassified); USES (Uses)

(oxynitriding gas; in manufacture of MOS transistor semiconductor  
device with lightly **doped** drain (LDD) structure)

L57 ANSWER 8 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN  
 ACCESSION NUMBER: 1973:481340 HCAPLUS  
 DOCUMENT NUMBER: 79:81340  
 TITLE: High surface area nitride catalysts of boron,  
 aluminum, and silicon for hydrocarbon conversion  
 reactions  
 INVENTOR(S): Mattox, William Judson  
 PATENT ASSIGNEE(S): Esso Research and Engineering Co.  
 SOURCE: Brit., 10 pp.  
 CODEN: BRXXAA  
 DOCUMENT TYPE: Patent  
 LANGUAGE: English  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
GB 1313174	A	19730411	GB 1970-23686	197005 15
NL 7007966	A	19701204	NL 1970-7966	197006 02
PRIORITY APPLN. INFO.:			US 1969-829740	A 196906 02

AB Heating **mixts.** of B<sub>2</sub>O<sub>3</sub>, Al, or Si with ammonia or N in acid-soluble matrix-forming material 2-9 hr at 1200-2800°F, removing the matrix by treating with dilute aqueous HCl, washing and drying gave 45-273 m<sup>2</sup>/g surface area nitride catalysts useful for petroleum cracking. An aqueous paste of 1 part B<sub>2</sub>O<sub>3</sub> and 6 parts Ca<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> was dried, **crushed**, nitrided 3 hr at 1850°F, extracted with 3 portions 3N HCl, dried, and calcined at 1000°F to give BN with a surface area 238 m<sup>2</sup>/g. Conversion of light gas oil at 430-650°F was 30.7 and 42.2% for BN catalysts with surface areas 77 and 230 m<sup>2</sup>/g, resp., compared with 19.3% for BN with surface area 11 m<sup>2</sup>/g. BN-Al<sub>2</sub>O<sub>3</sub> and BN-SiO<sub>2</sub>-Al<sub>2</sub>O<sub>3</sub> catalysts were also manufactured

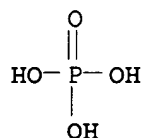
IT 7758-87-4

RL: USES (Uses)

(boron nitride preparation in matrix of)

RN 7758-87-4 HCAPLUS

CN Phosphoric acid, calcium salt (2:3) (9CI) (CA INDEX NAME)



● 3/2 Ca

IC C01B; B01J

CC 51-5 (Petroleum, Petroleum Derivatives, and Related Products)  
Section cross-reference(s): 49, 67

IT Petroleum refining catalysts  
(cracking, metal nitrides, for gas oils)

IT 1309-48-4, uses and miscellaneous 7758-87-4  
RL: USES (Uses)

(boron nitride preparation in matrix of)

IT 7429-90-5, reactions 7440-21-3, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(nitriding of, in calcium phosphate matrix)

L57 ANSWER 9 OF 9 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1962:461598 HCAPLUS

DOCUMENT NUMBER: 57:61598

ORIGINAL REFERENCE NO.: 57:12197d-g

TITLE: Corrosion and electrochemical properties and  
methods of protection of nitrided stainless  
steel

AUTHOR(S): Andreeva, A. G.; Gurvich, L. Ya.

SOURCE: Korroziya i Zashchita Metal., Sb. Statei (1962)  
118-37

DOCUMENT TYPE: Journal

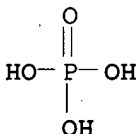
LANGUAGE: Unavailable

AB cf. CA 53, 19816a. The characteristics of the 4 zones of the  
nitrided layer (loc. cit.) were described as follows: 1st zone, low  
stability in H<sub>2</sub>O and relatively neg. electrode potential, E; 2nd  
zone, starting about 0.01 mm. from the surface, high stability and  
relatively high pos. E; 3rd zone, unstable and low E; 4th zone, the  
core, high stability and relatively high pos. E.  
Nitriding under the optimum conditions, 560-600° with  
NH<sub>3</sub> dissociated 20-40%, resulted in the maximum absorbed N. It reduced  
the thickness, but did not eliminate the 3rd zone. The final  
thickness of the latter was a function of the structure of the  
steel. The thickness varied from 50 to 80% of the total thickness  
of the nitrided layer in ferrite steels and from 20 to 30% in  
austenite steels. The 2nd zone in steel Kh18N8V2 consisted of  
γ-solid solution containing .apprx.2% Cr and up to 4% N and of  
ε-phase containing complex nitrides with a hexagonal crystal  
lattice. Treating nitrided steel 25Kh18N8V2 with boiling 10%  
K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> followed by hydrophobization with a organosilicon liquid  
increased corrosion resistance in H<sub>2</sub>O and in humid air. Steels  
Kh10S2M and 2Kh13 were protected by treatment in boiling solns.  
containing K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> 10, NaCl 0.5, and Na<sub>3</sub>PO<sub>4</sub> 0.3 %.

IT 7601-54-9, Sodium phosphate (Na<sub>3</sub>PO<sub>4</sub>)  
(stainless steel (nitrided) treatment with K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> and)

RN 7601-54-9 HCAPLUS

CN Phosphoric acid, trisodium salt (8CI, 9CI) (CA INDEX NAME)



●3 Na

CC 20 (Ferrous Metals and Alloys)  
IT 7778-50-9, Potassium dichromate(VI)  
(and mixts. with Na<sub>3</sub>PO<sub>4</sub>, stainless steel coating with,  
after nitridation)  
IT 7601-54-9, Sodium phosphate (Na<sub>3</sub>PO<sub>4</sub>)  
(stainless steel (nitrided) treatment with K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> and)

=>

The following hits were displayed by titles and only few of them seemed to be related were displayed in details.

=> d 153 ti 1-44

- L53 ANSWER 1 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Microstructure and properties of the **oxynitrided** Ti-6Al-4V alloy
- L53 ANSWER 2 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Cartridge for water purifier having pollutant adsorption and water disinfection functions and water purifier having the cartridge
- L53 ANSWER 3 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Hydroxyapatite Pulsed Laser Deposited thin films behaviour when submitted to biological simulated tests
- ✓ L53 ANSWER 4 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Structural and electrical characterization of oxidized, nitrided, and **oxynitrided** (100) GaAs surfaces
- L53 ANSWER 5 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Metal wire-reinforced gasket with good heat resistance for an automobile exhaust pipe
- ✓ L53 ANSWER 6 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Activation of steel surface by oxynitriding
- ✓ L53 ANSWER 7 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Thin solid electrolyte battery
- L53 ANSWER 8 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Production of a functional coating for protection against wear, corrosion, and heat
- L53 ANSWER 9 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Improvement of the corrosion resistance of low-pressure nitrided and post-oxidized steels by a polymer **impregnation** final treatment
- ✓ L53 ANSWER 10 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI The influence of glow discharge nitriding, oxynitriding and carbonitriding on surface modification of Ti-1Al-1Mn titanium alloy
- L53 ANSWER 11 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Lubricants for hot working of metals
- L53 ANSWER 12 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI A novel family of solid basic catalysts obtained by nitridation of crystalline microporous aluminosilicates and aluminophosphates
- L53 ANSWER 13 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Incorporation and role of nitrogen during oxynitridation of silicon studied by photoelectron spectroscopy
- L53 ANSWER 14 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI The use of non-oxide/oxide-type ceramic materials, the ceramic products obtained, and manufacture of the ceramic products
- L53 ANSWER 15 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN



- ✓  
TI Corrosion resistance of **oxynitrided** layers formed on selected grades of structural steels under glow discharge conditions
- L53 ANSWER 16 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI **Composition** of steel surfaces and its influence on the gas **nitriding** mechanism
- L53 ANSWER 17 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Agent for improving surface properties of steel tubes joined by forging
- L53 ANSWER 18 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Lubricating mechanisms of sulfurized olefin on **oxynitrided** steel surface under boundary lubrication condition
- L53 ANSWER 19 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Solid propellant based on phase-stabilized ammonium nitrate
- L53 ANSWER 20 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Sensors for determining hydrogen dissolved in molten metals
- L53 ANSWER 21 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Superplasticizer-based inorganic **admixtures** for cement
- L53 ANSWER 22 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Increasing the corrosion resistance of gas phase nitrided low carbon steel with inhibitors
- L53 ANSWER 23 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Corrosion resistance of **oxynitrided** layers. Experimental results
- L53 ANSWER 24 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Pretreatment of steel surfaces before nitriding in ammonia-containing gas **mixtures**
- L53 ANSWER 25 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI X-ray photoelectron spectroscopy and Auger electron spectroscopy studies on the passivation behavior of plasma-nitrided low alloy steel in nitric acid
- L53 ANSWER 26 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Thermochemical treatment of alloys
- L53 ANSWER 27 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Plasma heat treatment of steel in a nitriding and oxynitriding atmosphere and in a **mixture** of air and natural gas
- L53 ANSWER 28 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Oxynitridation process for protective finish coating on ferrous articles
- L53 ANSWER 29 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Manufacture of silicon oxynitride electrically insulating thin films
- L53 ANSWER 30 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Oxynitridation of high-speed steel tools
- L53 ANSWER 31 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Characterization of nitride-containing layers

L53 ANSWER 32 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Gaseous oxy-nitriding of steel 3Cr2W8V

L53 ANSWER 33 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Channeling analysis of thermally nitrided silicon

L53 ANSWER 34 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Surface analysis of an oxynitrided heat-resisting steel

L53 ANSWER 35 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Characterization of oxynitrided phosphate glasses

L53 ANSWER 36 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Nitridability of selected alloy steels

L53 ANSWER 37 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Method of surface treatment of steel workpieces

L53 ANSWER 38 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Oxynitridation of surfaces of metallic articles such as high-speed steel tools

L53 ANSWER 39 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Oxynitrided ferrosilicon

L53 ANSWER 40 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Structure and chemical composition of oxynitrided surface layers of high-speed steel

L53 ANSWER 41 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Coating for surfaces which contact hot glass

L53 ANSWER 42 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Friction materials

L53 ANSWER 43 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Effect of polarization on fatigue strength of steel in nitrate-nitrite melts

L53 ANSWER 44 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
TI Oxidizing and nitriding of special steels in nitrate-nitrite medium

=> => d l53 ibib abs hitstr hitind 4 6 7 10 15  
YOU HAVE REQUESTED DATA FROM FILE 'HCAPLUS' - CONTINUE? (Y)/N:y

L53 ANSWER 4 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN  
ACCESSION NUMBER: 2003:587718 HCAPLUS  
DOCUMENT NUMBER: 139:253119  
TITLE: Structural and electrical characterization of oxidized, nitrided, and oxynitrided (100) GaAs surfaces  
AUTHOR(S): Paul, Narayan Chandra; Nakamura, Kazuki; Takebe, Masahide; Takemoto, Akira; Inokuma, Takao; Iiyama, Koichi; Takamiya, Saburo; Higashimine, Koichi; Ohtsuka, Nobuo; Yonezawa, Yasuto  
CORPORATE SOURCE: Graduate School of Natural Science and

Technology, Kanazawa University, Ishikawa,  
920-8667, Japan

SOURCE: Japanese Journal of Applied Physics, Part 1:  
Regular Papers, Short Notes & Review Papers  
(2003), 42(7A), 4264-4272  
CODEN: JAPNDE

PUBLISHER: Japan Society of Applied Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Oxidation by the UV & ozone process, nitridation by the nitrogen  
helicon-wave-excited plasma process, and the **combination**  
of these processes are applied to (100) GaAs wafers. An atomic force  
microscope, XPS, a transmission electron microscope,  
photoluminescence, and elec. characteristics (current-voltage and  
capacitance-voltage) were used to analyze the influences of these  
processes on the structure and **composition** of the surfaces and  
the interfaces. MIS and Schottky diodes were fabricated in order to  
investigate the elec. influences of these processes. The oxidation  
slightly disorders the GaAs surface. Nitridation of a bare surface  
creates about a 2-nm-thick strongly disordered layer, which strongly  
deteriorates the elec. and photoluminescence characteristics.  
Nitridation of oxidized wafers (oxynitridation) forms firm amorphous  
GaON layers, which contain GaN, with very flat and sharp GaON/GaAs  
interfaces, where crystal disorder is hardly observed. It improves the  
current-voltage (I-V) and capacitance-voltage (C-V) characteristics  
and the photoluminescence intensity. Results of the structural and  
the elec. characterizations qual. coincide well with each other.

CC 76-2 (Electric Phenomena)  
Section cross-reference(s): 73

IT Nitriding  
(oxynitriding; structural and elec. characterization of oxidized,  
nitrided, and **oxynitrided** (100) GaAs surfaces)

IT Electric capacitance-potential relationship  
Electric current-potential relationship  
Luminescence  
Nitriding  
(structural and elec. characterization of oxidized, nitrided, and  
**oxynitrided** (100) GaAs surfaces)

IT 1303-00-0, Gallium arsenide, properties  
RL: PRP (Properties)  
(structural and elec. characterization of oxidized, nitrided, and  
**oxynitrided** (100) GaAs surfaces)

REFERENCE COUNT: 25 THERE ARE 25 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L53 ANSWER 6 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2003:158588 HCAPLUS

DOCUMENT NUMBER: 138:173740

TITLE: Activation of steel surface by oxynitriding

AUTHOR(S): Dong, Juan; Haase, Brigitte; Bauckhage, Klaus

CORPORATE SOURCE: TU Shandong, Peop. Rep. China

SOURCE: HTM, Haerterei-Technische Mitteilungen (2002),  
57(6), 383-388  
CODEN: HTMMD5; ISSN: 0341-101X

PUBLISHER: Carl Hanser Verlag

DOCUMENT TYPE: Journal

LANGUAGE: German

AB In conventional gas nitriding in atmospheres containing ammonia,  
defective nitriding results can occur, i. e. soft spots or a

nitrided layer of insufficient or irregular thickness. These effects are due to lubricant, cutting fluid or cleaning agent residues or due to a passive oxide layer. This paper presents exptl. results showing that short-time oxynitriding is helpful to solve such problems. Phase anal. of an oxynitrided stainless steel surface shows that the outer layer consists mainly of the metal oxides Fe<sub>2</sub>O<sub>3</sub>, Fe<sub>3</sub>O<sub>4</sub> and Cr<sub>2</sub>O<sub>3</sub>. This oxide layer is permeable for nitrogen during oxynitriding and subsequent nitriding. Activation by oxynitriding, however, has its limits which are determined by the **composition** and the amount of contamination, the steel's tendency of passivation as well as interactions between both factors.

CC 55-7 (Ferrous Metals and Alloys)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L53 ANSWER 7 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2002:925553 HCAPLUS

DOCUMENT NUMBER: 138:15255

TITLE: Thin solid electrolyte battery

INVENTOR(S): Ito, Shuji; Iwamoto, Kazuya; Ukaji, Masaya;

Nanai, Norishige; Matsuda, Hiromu; Mino,

Tatsuji; Honda, Kazuyoshi; Takai, Yoriko

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002352850	A	20021206	JP 2001-154955	200105 24
PRIORITY APPLN. INFO.:				JP 2001-154955 200105 24

AB The battery has successive layers of a 1st collector, a first active mass, an electrolyte, a 2nd active mass and a 2nd collector connected to elec. conductors; where the thickness of the 1st active mass layer and the electrolyte layer is 1-20 and 1-10  $\mu$ m, resp. Preferably, the collectors are orthogonal to the conductor, the electrolyte is  $(\text{Li}_2\text{S})_x(\text{SiS}_2)_y(\text{Li}_3\text{PO}_4)_z$  [ $(x+y+z)=1$ ,  $x=0.3-0.8$ ,  $y=0.2-0.7$  and  $z=0.01-0.3$ ], and the 1st or 2nd active mass is  $\text{Li}_3\text{-aMaN}$  ( $0.2 < a < 0.6$ ; M= Co, Ni, Cu and/or Mn).

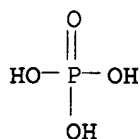
IT 10377-52-3, Lithium phosphate ( $\text{Li}_3\text{PO}_4$ )

RL: DEV (Device component use); USES (Uses)

(compns. of solid electrolyte for thin secondary lithium batteries)

RN 10377-52-3 HCAPLUS

CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



## ●3 Li

IC ICM H01M010-36  
ICS H01M010-36; H01M002-26; H01M002-30; H01M004-02; H01M004-58  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
ST thin battery solid electrolyte lithium **metal**  
**nitride** electrode  
IT Battery electrolytes  
(**compns.** of solid electrolyte for thin secondary  
lithium batteries)  
IT Secondary batteries  
(lithium; **compns.** of thin secondary lithium batteries  
containing solid electrolytes and lithium nitride anodes)  
IT 10377-51-2, Lithium iodide (LiI) 10377-52-3, Lithium  
phosphate (Li3PO4) 12136-58-2, Lithium sulfide (Li2S)  
13759-10-9, Silicon sulfide (SiS2) 90076-65-6, Lithium  
bis(trifluoromethanesulfonyl) imide 201471-17-2, Lithium phosphate  
sulfide thiosilicate (Li1.29(PO4)0.01S0.27(SiS3)0.36) 477704-33-9,  
Lithium nitride oxide phosphide (Li2.9N0.46O3.3P)  
RL: DEV (Device component use); USES (Uses)  
(**compns.** of solid electrolyte for thin secondary  
lithium batteries)

L53 ANSWER 10 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:819409 HCAPLUS

DOCUMENT NUMBER: 136:105758

TITLE: The influence of glow discharge nitriding,  
oxynitriding and carbonitriding on surface  
modification of Ti-1Al-1Mn titanium alloy

AUTHOR(S): Sobiecki, J. R.; Wierzchon, T.; Rudnicki, J.  
CORPORATE SOURCE: Faculty of Materials Science and Engineering,  
Warsaw University of Technology, Warsaw, 02-507,  
Pol.

SOURCE: Vacuum (2001), 64(1), 41-46  
CODEN: VACUAV; ISSN: 0042-207X

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Recent surface treatment studies show that titanium alloys should  
have an improved resistance to frictional wear and fatigue strength  
limit without any loss of their high corrosion resistance. These  
requirements can be satisfied by producing surface nitrided,  
**oxynitrided** and carbonitrided diffusion layers. This paper  
presents the results of metallog. examns., corrosion and wear  
resistance tests, surface chemical **composition** investigation, as  
well as rotating and bending fatigue tests. These surface  
treatments increase the useful properties of the titanium alloy.  
The influence of treatment time and the thickness of the layers on  
its properties are also investigated.

CC 56-7 (Nonferrous Metals and Alloys)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE  
FOR THIS RECORD. ALL CITATIONS AVAILABLE  
IN THE RE FORMAT

L53 ANSWER 15 OF 44 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 1998:366734 HCAPLUS

DOCUMENT NUMBER: 129:70286

TITLE: Corrosion resistance of **oxynitrided**  
layers formed on selected grades of structural  
steels under glow discharge conditions

AUTHOR(S): Trojanowski, Janusz; Fleszar, Agnieszka;  
Wierzchon, Tadeusz

CORPORATE SOURCE: Instytut Mechaniki Precyzyjnej, Warsaw, Pol.

SOURCE: Inzynieria Powierzchni (1997), (4), 12-19

CODEN: IPOWFU; ISSN: 1426-1723

PUBLISHER: Instytut Mechaniki Precyzyjnej

DOCUMENT TYPE: Journal

LANGUAGE: Polish

AB The paper presents the results of metallog., phase **composition**  
and corrosion resistance examns. of nitrided, carbonitrided,  
**oxynitrided** and oxycarbonitrided layers produced on steels.  
Produced compound layers have good corrosion resistance.

CC 55-7 (Ferrous Metals and Alloys)

IT Coating materials  
(anticorrosive; **oxynitrided** layers formed on structural  
steels under glow discharge conditions)

IT Nitriding  
(oxynitriding; corrosion resistance of **oxynitrided**  
layers formed on structural steels under glow discharge  
conditions)

IT Nitriding  
(plasma; corrosion resistance of **oxynitrided** layers  
formed on structural steels under glow discharge conditions)

IT 37268-90-9, Steel 45, processes 39344-94-0, 40H, processes  
157452-00-1, MM2, processes 208999-25-1, 25B Steel, processes

RL: PEP (Physical, engineering or chemical process); PRP  
(Properties); PROC (Process)

(corrosion resistance of **oxynitrided** layers formed on  
structural steels under glow discharge conditions)

=>